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THE *MELIGETHES* OF EAST AFRICA (COLEOPTERA: NITIDULIDAE)

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With 127 Text-figures

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I. Introduction

In dealing with the *Meligethes* of Abyssinia (Easton, 1959) the author embarked upon a study of the genus as represented in Africa south of the Sahara, and in the key there given a preliminary attempt was made at a sound taxonomic arrangement. This present paper continues that study by embracing species occurring in East Africa, *viz.* Uganda, Kenya, Tanganyika and the island of Zanzibar.

Gerstaecker, in 1871, was the first to describe a species of *Meligethes* from East Africa, giving it the name *heteropus*. Grouvelle, in 1908, contributed four additional descriptions, erected eight further species in 1909, one in 1911, and added a final one in 1913; but of these no fewer than five prove to have been duplicated under different names.

In the present paper 32 new species are described, which, with the addition of four previously recorded from other regions, brings the total of East African species to 46. One other species, *M. longiceps* Easton, known only from Abyssinia, has nevertheless been included in the key, for the sake of completion of that part dealing with the species-group to which it belongs.

Authentic examples, including types or paratypes, of all previously described species have graciously been made available by various museums for examination by the author. Much new or unnamed material has been loaned for study by the British Museum (Natural History), the Commonwealth Institute of Entomology, the Hungarian National Museum and others, but the major source has been the author's own collection amassed during a number of years through the energetic field-work of various friends, to whom due acknowledgment is made below.

Although the major divisions adopted in the key to the Abyssinian species have for the most part proved their validity, some degree of rearrangement has been found necessary, largely on practical grounds, though at the same time contributing, it is hoped, to a better understanding of the true taxonomy of the species. An overall picture now gradually emerges of the comparatively well-defined species-groups of which the Ethiopian *Meligethes* fauna is composed. One such division, the *sjöstedti*

species-group, is related to the Holarctic *aeneus* species-group. Numerous members of this group are known to occur in South Africa, and future study of them is keenly awaited. Species having front tibiae of the form defined in couplet 9 of the key (figs. 3–15), including the *spissus* and *gloriosus* species-groups, with a few more isolated species, are related to the northern *difficilis* species-group, and similarly appear to be attached to host-plants amongst the Labiatae. The *forcipatus* species-group, together with a few related species, begins to emerge as a readily recognisable entity of small, black insects all of rather similar aspect, and with a distinct type of front tibia (couplet 25, figs. 16–18). Rather more heterogeneous are the species of broader, rounded form separated in couplet 32 ; amongst them an *aethiopicus* species-group is defined. Finally, there is a residual motley of species of more parallel-sided, elongate form. Many of these show characters, *e.g.* dilated front tarsi, or a more prominent tooth near the basal third of the outer edge of the front tibiae, which serve as clues to their taxonomic arrangement. It is to be hoped that the future study of the more numerous South African species will do much to elucidate and clarify their relationships.

However, morphological studies are insufficient. Very much more must be known of the biology of the species before their taxonomy can be solved on a proper phylogenetic basis. It is already known that the species-groups, in the British Isles at least, are closely associated biologically with different botanical families, and the same is probably true throughout the distribution of the genus.

The text-figures of tibiae and male genitalia have been drawn direct from the dry mounted specimens ; in the case of the ovipositor this organ is unmounted and kept damp on a glass slide during drawing. The front tibiae are all represented, for the sake of uniformity and ease of comparison, as being that on the right side, but in a few instances the left fore tibia has been drawn and then inverted in mirror image.

II. Key to the East African Species of the Genus *Meligethes*

(Species described below as new are indicated by an asterisk.)

1 Outer edge of front tibiae (figs. 1 and 2) crenulate throughout, or with a few very small, sharp teeth close to apex, even in size and spacing ; front tibiae only feebly dilated, broadest immediately before apex 2

– Outer edge of front tibiae with distinct well-formed teeth, especially close to apex, or they are uneven in size or spacing, or are blunt ; front tibiae usually more strongly dilated, generally broadest further from apex. Head transverse ; curved lines on last sternite long and normally conspicuous . 9

2 Length 3·0–4·0 mm.; dull black, with side borders of pronotum narrowly reddish, legs reddish-yellow ; head strongly transverse ; upper surface extremely finely and closely punctate ; elytral punctures distinctly, closely transrugose . . . . . **atratus** (Olivier) (p. 270)

– If length more than 2·0 mm., colour dark greenish, bluish or brassy, and head less transverse ; elytral punctures not transrugose 3

3 Head less transverse, as long as wide excluding eyes ; curved lines on last sternite short, often inconspicuous or partly hidden beneath preceding segment. Dark greenish, bluish, or brassy. *Male :* metasternum with a deep median longitudinal furrow. *Female :* ovipositor (figs. 94–97) with apex piceous to black, styli of normal length inserted very close to its apex, or absent, coxites with outer subdivisions somewhat broad, the inner with their outer basal angles narrowly produced 4 (the *sjöstedti* species-group)

– Head transverse, wider (excluding eyes) than long. Black, or elytra with red discal mark 8

4 Upper surface much more coarsely and closely punctate, elytral punctures quite three times as large as eye facets, separated by less than half a

diameter. *Male :* unknown. *Female :* ovipositor (fig. 94) apparently without styli[1] . . . . . **favus*** (p. 271)

– Upper surface much more finely and less closely punctate, elytral punctures less than twice as large as eye facets, separated by at least one diameter. *Female :* ovipositor with normal styli 5

5 Length usually 1·7–2·6 mm. *Male :* tegmen of aedeagus with a more or less deep, V-shaped, apical excision. *Female :* ovipositor with transverse suture straight 6

– Length 1·9–3·9 mm. *Male :* tegmen of aedeagus with a shallow wider apical excision. *Female :* ovipositor with transverse suture V-shaped ; spermatheca globular 7

6 Usually smaller (length, 1·7–2·3 mm.), narrower ; sutural angle of elytra not acuminate ; upper surface, especially of elytra, more shining, without a silvery sheen. *Male :* tegmen of aedeagus with apical excision less deep, and lateral lobes wider. *Female :* ovipositor with apex more pointed and less deeply pigmented, " central point " further from apex ; spermatheca subglobular. *Abyssinia* . . . . . **longiceps** Easton (p. 271)

– Usually larger (length, 2·1–2·6 mm.), broader ; sutural angle of elytra more or less acuminate, especially in female ; upper surface less shining, elytra with a silvery sheen. *Male :* tegmen of aedeagus (fig. 34) with apical excision much deeper, and lateral lobes narrower. *Female :* ovipositor (fig. 95) with apex less sharply pointed and very deeply pigmented, " central point " at apical third ; spermatheca elongate, strongly curved. *Mountains of Uganda, Kenya, Tanganyika* . **subcaeruleus** Grouvelle (p. 273)

7 Length 1·9–2·6 mm.; elytral punctures slightly larger, separated by one diameter ; sides of pronotum slightly less widely explanate. *Male :* tegmen and median lobe (figs. 36 and 37) slightly more parallel-sided. *Female :* ovipositor (fig. 96) with inner subdivision of coxites more broadly sclerotized, their expanded base broader. *Tanganyika* **gemma*** (p. 274)

– Length 2·6–3·9 mm.; elytral punctures slightly finer, separated by about two diameters ; sides of pronotum slightly more widely explanate. *Male :* tegmen and median lobe (figs. 38 and 39) slightly narrowed from apical third. *Female :* ovipositor (fig. 97) with inner subdivisions of coxites more narrowly sclerotised, their expanded base much narrowed. *Uganda, Kenya, Tanganyika* . . . . **sjöstedti** Grouvelle (p. 275)

8 Length 1·25–1·45 mm., less elongate ; shining black, with legs piceous. *Male :* metasternum simple ; tegmen (fig. 40) with large V-shaped apical excision. *Female :* ovipositor (fig. 98) with apex deeply pigmented, styli long. *Tanganyika* . . . . . **carbunculus*** (p. 276)

– Length 1·85 mm., more elongate ; less shining, elytra with a large central patch, and legs, reddish-yellow. *Male :* not known. *Female :* ovipositor (fig. 99) unicolorous reddish-yellow, styli short. *Kenya* . **assutus*** (p. 278)

9 Outer edge of front tibiae (figs. 3–15) finely crenulate at least to basal third, then with a group of more or less long, sharp, downwardly directed teeth gradually increasing in size to the penultimate ; oval, somewhat strongly convex. Greenish to bluish-black, lighter or darker ferrugineous or chestnut brown to almost black 10

– Outer edge of front tibiae not of this pattern ; black, or nearly so . . . 25

10 Tarsal claws with a well-marked tooth at base ; with long conspicuous pubescence ; surface of elytra not transrugose ; length 2·5 mm.; castaneous. *Uganda* . . . . . **edwardsi*** (p. 278)

— Tarsal claws simple, or, if toothed, without the other characters combined 11

11 Tarsal claws toothed ; surface of elytra strongly transrugose ; length 1·9 mm. Pubescence normally conspicuous ; dark ferrugineous. *Tanganyika* **incognitus** Grouvelle (p. 279)

— If tarsal claws toothed, elytra not strongly transrugose 12

12 Elytral punctures very distinctly arranged in wavy transverse rows, thus strongly transrugose. *Male :* median lobe of aedeagus (fig. 45) broadened to

[1] In a unique specimen the possibility of absence of styli being traumatic cannot be excluded.

apical third, thence sinuately contracted to its blunt apex, with a flat lobule projecting on each side close to the latter on a more ventral plane. *Female*: ovipositor (Easton, 1959 : 400, fig. 59) narrow, elongate, with apex piceous, styli very long and narrow, inserted very close to the blunt apex, coxites with outer subdivisions much shorter than the subparallel inner subdivisions . . . . . 13 (the *spissus* species-group)

— Elytra, if transrugose, much less strongly so; median lobe of aedeagus of normal form 14

13 Oval, with very short inconspicuous pubescence; dark castaneous; antennae and legs dark pitchy reddish . . . . . **spissus** Grouvelle (p. 280)

— Elongate oval, with normally conspicuous pubescence; shining black; antennae and legs light brownish-yellow. *Kenya* . . . **kulalensis*** (p. 280)

14 Tarsal claws toothed at base; upper surface between punctures smooth; ferrugineous; oval; glabrous; elytra not transrugose. *Male:* metasternum and last sternite simple. *Female:* ovipositor unicolorous, its styli quite four times as long as wide, inserted close to apex. *Tanganyika, Zanzibar* . . . . . **rubiginosus** Grouvelle (p. 281)

— Without these characters combined. If tarsal claws toothed at base, then more elongate, and upper surface distinctly reticulate 15

15 Length 1·45 mm.; outer edge of front tibiae with only the penultimate tooth large, conspicuous and sharp; outer edge of intermediate tibiae (fig. 33) with a small emargination bearing a fine seta just beyond its widest point; upper surface glabrous, finely diffusely punctate, and distinctly reticulate; elytra not transrugose. *Male:* metasternum with a shallow median longitudinal impression, last sternite with a small shining transverse depression at its apex. *Female:* ovipositor (fig. 102) piceous at apex, with long terminal styli. *Zanzibar* . . . . . **johnsi*** (p. 281)

— Size larger; outer edge of front tibiae with subapical group including more than one large sharp tooth; outer edge of intermediate tibiae normal, with a continuous row of pegs 16

16 Teeth on outer edge of front tibiae much smaller, occupying not more than apical third of tibia; surface of elytra between punctures smooth; tarsal claws simple. *Male:* last sternite with a small apical tubercle, or simple. *Female:* ovipositor piceous at apex, with long terminal styli 17

— Teeth on outer edge of front tibiae larger, occupying more than apical third; surface of elytra between punctures usually distinctly reticulate. *Male:* metasternum with a well-marked, smooth unpunctured, median longitudinal band or furrow, or a tubercle on each side of its centre, or with both characters combined; last sternite with an apical well-defined smooth, transverse, oval area concave from side to side. *Female:* ovipositor (figs. 104–111) of normal triangular shape, the styli shorter, not inserted at extreme apex . . . . . 18 (the *gloriosus* species-group[2])

17 Broader, shorter; elytra scarcely transrugose, with very short inconspicuous pubescence. Antennal club exceptionally small. *Male:* metasternum and last abdominal sternite simple. *Tanganyika* . . . . . **pentasi*** (p. 282)

— Elongate oval; elytra transrugose, with normally conspicuous pubescence. *Male:* metasternum with two shining raised paramedian longitudinal ridges and last sternite with minute apical tubercle. *Kenya* . **varus*** (p. 283)

18 Upper surface between the punctures smooth. Male: concave surface at apex of last sternite scarcely wider than long. *Kenya* . . **leucasi*** (p. 285)

— Upper surface between the punctures reticulate throughout. *Male:* concave surface at apex of last sternite twice as wide as long 19

19 Tarsal claws with well-marked tooth at base 20

— Tarsal claws simple. Black, green, greenish or bluish 21

20 Lighter or darker reddish-brown; more elongate . . **fulvidus** Grouvelle (p. 287)

— Dark blackish-blue to black; less elongate . . . . . **equus*** (p. 287)

21 Broader, shorter; pronotum broadest at or very close to base; clypeus

[2] Includes also *spadix* Easton (SW. Arabia), *simulans* Easton (Abyssinia), and an undescribed species from SW. Africa.

with front margin more deeply sinuate in middle ; black, more or less dull **verdcourti*** (p. 289)

— Narrower, more elongate ; pronotum broadest further from base ; front margin of clypeus less deeply sinuate ; if black, more shining 22

22 Bright shining metallic green, legs uniformly reddish-brown ; teeth at apex of outer edge of front tibiae (fig. 12) of more uniform size and shorter ; length 2·5–2·8 mm. . . . . **gloriosus** Grouvelle (p. 290)

— Somewhat dull ; teeth on front tibiae longer, sharper, and less uniform ; length 1·8–2·5 mm. 23

23 Brighter, more or less metallic greenish ; slightly less rounded at sides. *Male :* aedeagus (figs. 64 and 65) more elongate, tegmen with apical excision deeper, median lobe more acuminate at apex. *Female :* ovipositor (fig. 109) with very short styli, " central point " at two-fifths from apex, with a long ventral spicule. *Meru* . . . . . **montivagus*** (p. 290)

— Darker, less metallic ; greenish, bluish, to black ; slightly more rounded at sides. *Male :* aedeagus (figs. 66–69) less elongate ; median lobe less acuminate at apex, tegmen with apical excision shallower. *Female :* ovipositor with styli at least twice as long as wide, " central point " further from apex, without or with a much shorter ventral spicule . . . 24

24 Length 2·0–2·4 mm.; brighter, more metallic, legs pitchy reddish-yellow. *Male :* aedeagus (figs. 66 and 67) longer, median lobe parallel-sided. *Female :* ovipositor (fig. 110) with styli longer, quite three times as long as wide . . . . . **sellaris*** (p. 292)

— Length 1·7–2·1 mm.; darker and duller, legs pitchy brown. *Male :* aedeagus (figs. 68 and 69) shorter, median lobe broadened towards apex. *Female :* ovipositor (fig. 111) with styli shorter, little more than twice as long as wide **lornae*** (p. 293)

25 Outer edge of front tibiae (figs. 16–18) without any trace of a more prominent tooth near basal third, crenulate at least as far as middle, with a subapical group of larger teeth, of which the intermediate are more prominent than those before and after, their apices obtusely pointed, rounded or truncate, so giving the edge of the tibia an almost evenly rounded contour ; length 1·5–2·1 mm.; subparallel, not strongly convex ; black ; front margin of clypeus widely emarginate with side angles sharp 26

— Without the above characters combined ; outer edge of front tibiae with a more prominent tooth, often extremely small, near basal third, or with other distinct teeth above the middle ; or size distinctly larger ; or more rounded at sides 30

26 Front tibiae and tarsi nearly black, outer edges of former with crenulations more evident nearer base ; apices of elytra separately more strongly rounded. *Male :* front tibiae and tarsi dilated, almost as in *cornutus* ; without underside secondary sexual characters. *Female :* front tibiae scarcely dilated, tarsi narrower than antennal club ; ovipositor (fig. 112) with a corona, paraprocts strongly expanded . . **paraproctatus*** (p. 294)

— Front tibiae and tarsi reddish ; outer edges of former with crenulations less evident near base ; apices of elytra less rounded, jointly subtruncate ; front tarsi strongly dilated in both sexes. *Male :* last abdominal sternite with apex widely shallowly excised, the angles bounding the excision sharp or prominent. *Female :* ovipositor (figs. 113–115) without a corona, paraprocts not expanded . . . . . 27 (the *forcipatus* species group[3])

27 Length 1·5–1·6 mm.; narrower, more parallel-sided. *Male :* metasternum with a low rounded eminence on either side of a median longitudinal sulcus ; angles bounding apical excision of last sternite (Easton, 1959 : 397, fig. 56) sharp, almost spinous ; tegmen of aedeagus (*loc. cit.*: 387, fig. 34) much narrower from shoulders, with short U-shaped apical excision and short rounded lateral lobes ; median lobe (*loc. cit.*: 387, fig. 35) parallel-

[3] Includes also *livens* Grouvelle from Abyssinia. *M. forcipatus* from Natal and other species from South Africa and Belgian Congo await description.

sided with rounded apex. *Female:* ovipositor (*loc. cit.*: 400, fig. 65) somewhat abruptly contracted towards apex. *Kenya, Abyssinia* **lividus** Easton (p. 296)

— Length 1·65–2·1 mm.; slightly broader, tending to be slightly rounded at sides 28

28 *Female:* ovipositor (fig. 113) without styli. *Male:* unknown **astylus*** (p. 296)

— *Female:* ovipositor with styli 29

29 Upper surface of elytra between punctures more distinctly reticulate; pronotum slightly less narrowed anteriorly; front tibiae reddish. *Male:* excision at apex of last sternite bounded on either side by a prominent tubercle whose pointed apex is directed inwards; tegmen of aedeagus (fig. 72) somewhat strongly narrowed from just beyond middle, with U-shaped apical excision, and short rounded lateral lobes. *Female:* ovipositor (fig. 114) with coxites shorter, and apex more obtuse. *Kenya, Uganda* . . . . . **cornutus*** (p. 297)

— Upper surface of elytra between punctures less distinctly reticulate; pronotum broadest at basal fourth, more narrowed anteriorly; front tibiae almost black. *Male:* unknown. *Female:* ovipositor (fig. 115) with coxites longer, and apex less obtuse. *Uganda* . . . **vacca*** (p. 299)

30 Outer edge of front tibiae (fig. 19) with fine serrate teeth from basal fourth gradually enlarging to two or three much larger before apex; upper surface of clypeus smooth, unpunctured; length 1·5–1·65 mm. **clypeonitens*** (p. 300)

— Without these characters combined; outer edge of front tibiae generally with a more prominent tooth near basal third 31

31 Outer edge of front tibiae (fig. 20) with rather large blunt teeth from basal third, subapical group not well differentiated; subparallel, with long, conspicuous, yellowish pubescence; legs reddish-brown; length 2·1–2·2 mm. *Male*: unknown. *Female*: ovipositor (fig. 117) with apex bifurcate, the tips of the inner subdivisions of the coxites bluntly rounded and divergent, with short styli on ventral aspect at some distance from apex **heteropus** Gerstaecker (p. 301)

— Without this combination of characters; ovipositor with apex normal, not divergent 32

32 General form less elongate, broader, more or less rounded at sides; inner edge of intermediate and hind tibiae more or less distinctly bordered 33

— General form more elongate, subparallel, feebly rounded at sides; inner edge of intermediate and hind tibiae not or scarcely bordered 42

33 Antennal club broader, shorter, its apex subtruncate; length 1·7–3·2 mm. *Male:* apex of last sternite with a shining raised ridge, curved with its concavity directed backwards 34

— Antennal club narrower, more elongate, its apex more rounded 37

34 Upper surface with long dense yellowish pubescence. Outer edge of front tibiae (fig. 21) without a more prominent tooth near basal third, with a subapical group of small, somewhat uniform teeth, of which the first and last are larger than those between; antennae and legs red-brown; length 2·5 mm. *Male*: tegmen of aedeagus (fig. 74) with exceptionally long spatulate lateral lobes, and narrow cleft-like apical excision; median lobe (fig. 75) much shorter with rounded apex. *Female:* unknown **pilosus*** (p. 301)

— Upper surface with normally conspicuous or short pubescence 35 (the *aethiopicus* species-group)

35 With short inconspicuous pubescence, almost glabrous; broader and more rounded at sides. Surface of elytra between punctures more or less distinctly reticulate; length 1·7–2·3 mm. *Male:* shining ridge near apex of last sternite more curved, forming one-third of a circle; tegmen of aedeagus (fig. 76) with small apical excision, median lobe (fig. 77) slightly narrowed from apical third. *Female:* ovipositor (fig. 118) with apex less acute, without a ventral spicule . . . . . **hargreavesi*** (p. 302)

— With longer, normally conspicuous pubescence ; form less rounded at sides 36

36 Length 2·2 mm.; slightly less rounded at sides ; surface of elytra between punctures shallowly reticulate. *Male :* tegmen of aedeagus (fig. 78) with small U-shaped apical excision, median lobe (fig. 79) less narrowed from apical third. *Female :* unknown . . . . . **hintoni*** (p. 303)

— Length 2·5–3·2 mm.; slightly more rounded at sides ; surface of elytra between punctures smooth or with a trace of cross-reticulation. *Male* : shining ridge at apex of last sternite less curved, forming about one-fifth part of a circle ; tegmen of aedeagus (Easton, 1959 : 387, fig. 28) with much larger apical excision, median lobe (*loc. cit.*: 387, fig. 29) more narrowed from middle. *Female :* ovipositor (*loc. cit.*: 400, fig. 61) with apex more acute, with a ventral spicule . . . . . **aethiopicus** Grouvelle (p. 305)

37 Glabrous, or with normally conspicuous pubescence ; less rounded at sides ; outer edge of front tibiae with a distinctly more prominent tooth near basal third, separated by a series of crenulations, or of small subequal teeth, from a subapical group of larger teeth of which the first and penultimate are more prominent than those between 38

— With somewhat conspicuous pubescence ; oval, distinctly rounded at sides ; outer edge of front tibiae without or with a minutely more prominent tooth near basal third, and teeth of subapical group smaller 41

38 Antennal club broader ; scutellum punctate, at least in part 39

— Antennal club narrower ; scutellum almost impunctate 40

39 Length 1·6 mm.; outer edge of front tibia with second more prominent tooth much nearer third than first ; scutellum with punctures evenly distributed **elgonensis*** (p. 305)

— Length 2·4 mm.; outer edge of front tibia with second more prominent tooth only slightly nearer third than first ; scutellum with punctures confined to a single peripheral row . . . . . **profugus*** (p. 306)

40 Glabrous ; elytral punctures slightly shallower and surface between them more distinctly reticulate ; length 1·9–2·8 mm. *Male :* apex of last sternite with a shining transverse ridge, slightly curved with its concavity directed backwards. Tegmen of aedeagus (fig. 82) rounded at apex with minute U-shaped excision ; median lobe (fig. 83) subparallel with rounded apex. *Female :* ovipositor (fig. 120) small, bluntly pointed, somewhat piceous at apex ; with very short styli inserted terminally ; "central point" at apical third, without a ventral spicule ; transverse suture widely V-shaped . . . . . **voeltzkowi** Grouvelle (p. 307)

— With fine but distinct pubescence ; elytral punctures slightly deeper and surface between them more obscurely reticulate ; length 2·1 mm. *Male :* not known. *Female :* ovipositor (fig. 121) extremely like that of *voeltzkowi*, but unicolorous yellow, and transverse suture straight **mimetes** Grouvelle (p. 308)

41 Pubescence shorter, less conspicuous ; front tibiae (fig. 26) narrower near base, all tibiae slightly narrower. *Male :* unknown. *Female :* ovipositor (fig. 122) with apex piceous, bluntly pointed . . . . . **perfectus*** (p. 308)

— Pubescence longer, more conspicuous ; front tibiae (fig. 27) subparallel, all tibiae slightly broader. *Male :* unknown. *Female :* ovipositor (fig. 123) entirely yellowish, sharply pointed. . . . . **imperfectus*** (p. 309)

42 Length 2·4–3·1 mm.; tibiae reddish, with edges black ; scutellum with few punctures confined to an irregular transverse row close to its apex. *Male :* with a shining curved ridge, concave posteriorly, close to apex of last ventral segment of abdomen. *Female :* ovipositor (fig. 124) long and pointed, piceous at apex, with short styli inserted close to apex **rileyi*** (p. 310)

— Length 1·6–2·4 mm.; legs black or nearly so ; scutellum with punctures more numerous and more evenly distributed 43

43 Front tarsi in both sexes wider than antennal club ; length 2·1–2·4 mm. *Male :* without underside secondary sexual characters 44

— Front tarsi in both sexes narrower than antennal club ; length 1·6–2·1 mm. 45

44 Front tarsi almost as wide as front margin of clypeus ; teeth on outer edge

of front tibiae (fig. 29) very much larger, and subtarsal plate conspicuous ; upper surface between punctures smooth. *Male* : tegmen of aedeagus (fig. 86) with apical excision shallower U-shaped, lateral lobes shorter and broader. *Female :* unknown
(in the *latimanus* species-group) **amplimanus*** (p. 312)

— Front tarsi distinctly less wide than front margin of clypeus ; teeth on outer edge of front tibiae (fig. 30) very much smaller, and subtarsal plate inconspicuous ; upper surface between punctures microscopically reticulate. *Male :* tegmen of aedeagus (fig. 88) with apical excision deeper U-shaped, lateral lobes somewhat longer and narrower. *Female :* ovipositor (fig. 125) with short styli close to apex, outer subdivisions of coxites long
lepelleyi* (p. 312)

45 More elongate ; much more diffusely punctate, elytral punctures separated by more than two diameters ; deep black with inconspicuous pubescence ; whole upper surface between punctures distinctly reticulate. *Male* : last ventral segment of abdomen without definite secondary sexual character. *Female* : ovipositor (fig. 126) without a corona, and with short styli
johnstoni* (p. 313)

— Less elongate ; much more closely punctate, elytral punctures separated by less than two diameters ; with conspicuous pubescence ; upper surface between punctures not, or obscurely, reticulate. *Male :* with secondary sexual character at apex of last sternite 46

46 Less intensely black, legs dark reddish-brown ; upper surface with punctures larger and less close, more shining ; pronotum nearly twice as wide as long ; inner edge of hind tibiae more evenly convex. *Male :* last abdominal sternite with a small shining tubercle at apex ; tegmen of aedeagus (Easton, 1959 : 397, fig. 46) with a wide U-shaped apical excision ; median lobe with apex narrowly truncate. *Female :* ovipositor (*loc. cit.*: 400, fig. 73) unicolorous yellowish, with a narrow corona ; styli shorter and further from apex . . . . . **scotti** Easton (p. 315)

— Entirely deep black ; upper surface with punctures finer and closer, less shining ; pronotum less strongly transverse ; inner edge of hind tibiae with greatest convexity at basal third. *Male :* last abdominal sternite with edge at extreme apex thickened and arched forward slightly on to ventral surface as a shining curved ridge ; tegmen of aedeagus (fig. 92) with apical excision narrower, lateral lobes short and broad ; median lobe (fig. 93) with apex almost rounded. *Female :* ovipositor (fig. 127) with apex piceous, without a corona ; styli long and closer to apex
patiens* (p. 315)

III. Descriptions of and Notes on the Species

Meligethes atratus (Olivier)

Nitidula atrata Olivier, 1790, *Entomologie* **2** (12) : 18, pl. 4, fig. 31.
N. rufipes Marsham, 1802, *Ent. Brit.* **1** : 130.

A single female specimen in the Grouvelle collection of the Muséum National d'Histoire Naturelle, Paris, is labelled : " Ost-Afrika. Usambara. Fruhstorfer ". *M. atratus* is native throughout Europe and reaches Siberia, its larval stages being passed in flowers of *Rosa* spp. The labelling of this East African specimen would thus be strongly suspect were it not for the existence of similar unique examples from Tunisia (Easton, 1955*c*) and even British Columbia (Easton, 1955*a*). The occasional introduction of the species with cultivated roses is the probable explanation of these more distant records.

Meligethes favus sp. n.

Female.—Length, 2·3 ; breadth, 1·25 mm. Elongate, slightly rounded at sides, moderately convex, dark blue, dull, with fine, recumbent, inconspicuous pubescence ; antennae and legs dark reddish-black. *Head* narrow, as long as wide, almost flat, with a minute depression close to anterior end of each eye ; clypeus with front margin narrowly bordered, almost straight with side angles narrowly rounded ; surface with deep punctures almost twice as large as eye facets, separated by half a diameter, the narrow ridges between them reticulate. Antennae dark blackish-red, club almost black ; club oval, one and two-thirds times as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (1·1 : 0·75 mm.), widest almost at base ; sides convergent and gently rounded, more so in anterior third, distinctly bordered, and explanate for width equal to that of first antennal segment. Anterior margin straight, anterior angles obtuse and rounded off, not projecting forwards. Hind margin longer than front (1·1 : 0·65 mm.), feebly convex and feebly sinuate on either side of scutellum ; hind angles obtuse and widely rounded off. Surface with deep punctures twice as large as eye facets, separated by less than one diameter, spaces between them distinctly reticulate. *Elytra* longer than wide (1·4 : 1·25 mm.), with sides gently rounded, widest just before middle ; sides narrowly bordered ; hind angles widely rounded off ; apices separately rounded, slightly oblique, not acuminate ; sutural angle obtusely pointed. Shoulders weakly raised, with an obsolete humeral stria. Surface with deep elongate punctures nearly twice as large as those of pronotum, separated by very narrow ridges on which can be seen only traces of reticulation. *Scutellum* with apex rounded, surface distinctly reticulate, with multiple small shallow punctures. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process narrow, three-quarters as wide as antennal club, with apex rounded, and sides bordered ; its punctures smaller than eye facets, separated by one diameter, surface between them smooth. Mesosternum with surface closely reticulate, and with a few punctures at its postero-external angles, hind edge straight. Metasternum with slightly rugose punctures equal in size to eye facets, separated by one diameter, surface between them smooth. Abdomen with first sternite punctured almost as metasternum, succeeding segments much more finely and closely so, all with surface aciculate. Caudal marginal line of hind coxal cavity follows closely the posterior edge of the latter and turns back only just before reaching its outer end. *Legs* dark reddish-black. Front tibiae evenly widened to apex, here as wide as antennal club ; outer edge with feeble crenulations from basal third, gradually developing to two small teeth at apical angle, then a minute tooth before the very narrow subtarsal plate. Intermediate and hind tibiae slightly wider, subparallel, their outer edge furnished with very close, fine, pale, downwardly directed pegs. Inner edge of front tibiae almost straight, of intermediate and hind weakly convex at basal third, not bordered. Front tarsi about half, intermediate and hind about one-third, as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* as figured (fig. 94). Ovipositor red-brown, with apex slightly pitchy, sharply pointed ; styli apparently replaced by a sensory hair[4] ; coxites with outer subdivisions broad and rather short, inner subdivisions with outer basal angles produced laterally ; " central point " at distal third, without a ventral spicule ; transverse suture straight.

Male.—Unknown.

Type ♀, KENYA : Londiani, v.1936 (*N. L. H. Krauss*) ; in British Museum (Natural History). Unique.

Comparative notes.—A member of the *sjöstedti* species-group, *M. favus* is at once distinguished from all its nearer East African relatives by its surface sculpture. In this respect it resembles others known to occur in South Africa, though these generally exhibit much more conspicuous pubescence.

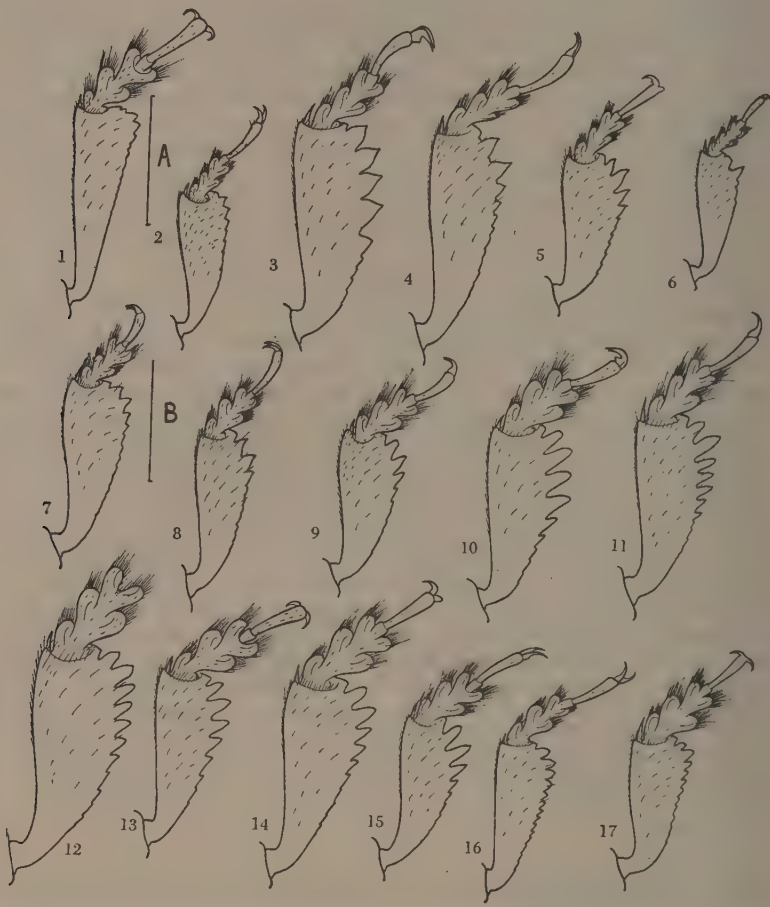
Meligethes longiceps Easton

M. longiceps Easton, 1959, *Trans. R. ent. Soc. Lond.* 111 : 373.

This species, though not known from outside Abyssinia, has been included in the present paper by reason of its great proximity to others of the *sjöstedti* species-group as represented in East Africa.

[4] In a unique specimen the accidental loss of styli cannot be excluded.

With the exception of *M. favus*, the four other species of this group are very closely related, and their differences often difficult to define, or interpret. The identification of single specimens may be extremely hazardous, especially in the case of individuals outside the normal range of size. However, they are usually collected



Figs. 1–17.—Right front tibia: (1) *Meligethes sjöstedti* Grouvelle. (2) *M. assutus* sp. n. (3) *M. edwardsi* sp. n. (4) *M. kulalensis* sp. n. (5) *M. rubiginosus* Grouvelle. (6) *M. johnsi* sp. n. (7) *M. pentasi* sp. n. (8) *M. varus* sp. n. (9) *M. leucasi* sp. n. (10) *M. equus* sp. n. (11) *M. verdcourti* sp. n. (12) *M. gloriosus* Grouvelle. (13) *M. montivagus* sp. n. (14) *M. sellaris* sp. n. (15) *M. lornae* sp. n. (16) *M. paraproctatus* sp. n. (17) *M. astylus* sp. n. Scale A (fig. 1) = 0·35mm. Scale B (figs. 2–17) = 0·25mm.

in long series, and this allows of correct interpretation of any intraspecific variation. Colour is variable in all, but in *subcaeruleus* at least we have reliable characters in the more acuminate apex of the elytra, and the striking form of its spermatheca.

M. longiceps is smaller than *subcaeruleus*, its elytra are not acuminate at the apex, and its pronotum tends to be less strongly transverse.

Meligethes subcaeruleus Grouvelle

M. subcaeruleus Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–06, 1 : 319.
M. splendens Grouvelle, 1909, *idem*: 320, **syn. nov.**

The type series of *M. subcaeruleus*, in the Naturhistoriska Riksmuseum, Stockholm, includes ten examples from Kilimandjaro: Kiboscho, 3,000–4,000 m., ii (*Sjöstedt*). One of these, a female, has been selected as lectotype. There are 13 similar specimens from the same source in the Muséum National d'Histoire Naturelle, Paris.

Eight specimens in the Stockholm Museum, hitherto regarded as the type series of *M. splendens*, differ in many major characters from Grouvelle's description of the species, and are unacceptable as such. They are dealt with elsewhere in this paper as *M. montivagus* sp. n. A single male specimen in the Paris Museum, reputed to be an authentic example of *splendens*, but unhappily without further data, does agree exactly with the description, and is therefore designated as lectotype. It is identical with *subcaeruleus*.

It would appear that Grouvelle originally correctly separated two quite distinct species, intending to call them *subcaeruleus* and *splendens* respectively, but that subsequently, in writing his descriptions, he erroneously used two specimens of the former, overlooking the latter entirely.

Reticulation of upper surface between punctures consisting of small polygonal cells, markedly convex, especially on elytra, producing a silvery sheen. Front margin of clypeus widely shallowly emarginate with side angles more or less rounded, not truncate as in Grouvelle's descriptions. *Male :* pronotum slightly less transverse, sides less rounded and less convergent towards front; apex of elytra less acuminate towards sutural angle; front and intermediate tibiae somewhat dilated, front tarsi as wide as antennal club; inner edge of hind tibiae feebly sinuate in apical third; legs and first and second antennal segments reddish-brown in specimens from Kilimandjaro, to almost black in those from Aberdare Mountains and Mt. Elgon; metasternum with a deep, wide, longitudinal excavation in the hind three-quarters, broadening posteriorly; last sternite simple. Aedeagus (figs. 34 and 35) subparallel; tegmen with deep V-shaped apical excision, lateral lobes with narrowly rounded apex; median lobe with rounded apex having a minute terminal sinuation. *Female* : apex of elytra more acuminate towards sutural angle, as in *M. ovatus* Sturm; front tarsi two-thirds as wide as antennal club; inner edge of hind tibiae and metasternum simple; legs and antennae almost quite black. Ovipositor (fig. 95) dark pitchy brown, with apex almost black, area around insertion of styli and base of latter lacking pigment; styli somewhat long, very close to the bluntly pointed apex and projecting well beyond it; outer subdivisions of coxites broad; " central point " at apical third; transverse suture almost straight. Spermatheca elongate, strongly curved.

Variations.—Length 1·8–2·6 mm. Colour varies from green to blue, purplish, or almost black. Sexual dimorphism as noted above is well marked. The degree of acumination of apex of elytra varies in both sexes, being often almost absent in the male.

Tanganyika: Kilimandjaro, Kiboscho, 3,000–4,000 m., ii (*Sjöstedt*), 10 ex. including lectotype; in the Naturhistoriska Riksmuseum, Stockholm. Thirteen ex., same data, in the Muséum National d'Histoire Naturelle, Paris. Kilimandjaro, 9,500 ft., on *Helichrysum* sp. (Compositae), 1 ♂, 3 ♀; at 11,000–12,000 ft., on *H. splendidum* (Thunb.) Less., 2 ♂, 4 ♀, and on *Protea kilimandscharica* Engler (Proteaceae) 2 ♂, 1 ♀ (all *B.* and *L. Verdcourt*); in the author's collection.

Kenya: Aberdare Range, Mt. Kinangop, 10,000 ft., 26.x.1934 (*F. W. Edwards*, B. M. East Africa Exp.), 1 ex., and Nyeri Track, 10,000–11,000 ft., 28.x.1934 (*F. W. Edwards*, B. M. East Afr. Exp.), 3 ♀; in British Museum (Natural History).

Uganda: Elgon, 10,000–11,000 ft., 21.viii.1929 (*G. L. R. Hancock*), 1 ♂; Kigezi District, Mt. Muhavura, 10,500 ft., 17.xi.1934 (*J. Ford*, B. M. East Afr. Exp.), 1 ex.; in British Museum (Natural History). Mt. Elgon, 2,200 m., ii.1926 (*Alinder*),

1 ex., and 3,760 m., 26.xii.25 (*Alinder*), 2 ex.; in the Zoologische Sammlung des Bayerischen Staates, München.

Biology.—Active viii, x, xi, xii and ii, at altitudes 7,200–13,000 ft.

Comparative notes.—Larger and less shining than *longiceps*, *M. subcaeruleus* shows more similarity to *gemma*. It is usually readily distinguishable from all others of its species-group by the acuminate apex of its elytra, whilst the form of its spermatheca is quite characteristic.

Meligethes gemma sp. n.

Male.—Length, 2·5; breadth, 1·25 mm. Elongate, slightly rounded at sides, moderately convex, dark green with a silvery metallic sheen, moderately shining, with short pale pubescence; legs fuscous reddish-brown. *Head* narrow, as long as wide, almost flat, with a shallow depression on each side close to anterior end of eye; clypeus with front margin bordered, widely shallowly emarginate with side angles sharp; surface with deep punctures very slightly larger than eye facets, separated by less than one diameter, spaces between them distinctly reticulate with small polygonal cells. Antennae with segments one and two reddish, succeeding segments darkening to the black club; club elongate, one and two-thirds times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·15 : 0·65 mm.), widest almost at base; its sides convergent and gently rounded, more so in anterior third, narrowly bordered and narrowly explanate. Anterior margin feebly convex medially, curving forward at each end to the obtusely rounded front angles. Hind margin longer than front (1·1 : 0·65 mm.), feebly convex, scarcely sinuate on either side of scutellum; hind angles blunt, obtuse. Surface with deep punctures equal in size to eye facets, separated by one diameter, spaces between them strongly reticulate with small polygonal cells. *Elytra* longer than wide (1·5 : 1·25 mm.), with sides gently rounded, broadest about middle and here slightly wider than pronotum; sides very narrowly bordered; hind angles widely rounded, apex of each very slightly oblique, weakly convex; sutural angle obtuse. Shoulders weakly raised, without a humeral stria. Surface near base with shallow, rather triangular punctures equal in size to those of pronotum, separated by one diameter, but gradually shallower, finer, and more diffuse towards apex, spaces between them strongly reticulate with small polygonal, slightly convex cells. *Scutellum* triangular, with rounded apex, its surface finely reticulate and finely punctate. *Pygidium* with surface minutely granular. *Ventral surface* black. Prosternal process narrow, scarcely as wide as antennal club, bluntly pointed; its punctures very much finer than the eye facets, surface between them smooth. Mesosternum impunctate, reticulate, with a median longitudinal keel. Metasternum with shallow punctures half as large as eye facets, separated by one and a half diameters, surface between them distinctly reticulate; somewhat flattened, with a deep median longitudinal impression in the hind two-thirds, twice as wide as antennal club, not widened posteriorly. Abdomen with sternites closely reticulate, and with minute discrete punctures. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back immediately before reaching its outer end. Last sternite with curved lines short; without secondary sexual character. *Legs* with tibiae reddish-brown, femora and tarsi slightly darker; tibiae long and narrow, nearly four times as long as wide. Front tibiae widest at apical angle, here one and a third times as wide as antennal club; outer edge scarcely visibly crenulate, curving outwards very slightly to a small tooth at the apical angle, with a minute tooth between this and the somewhat narrow subtarsal plate. Intermediate and hind tibiae broadest at apical fifth, their outer edges clothed with dense, long, fine, downwardly directed bristles. Inner edges of all tibiae almost straight, not bordered. Front tarsi narrow, three-quarters as wide as antennal club, intermediate and hind two-thirds as wide as club; last segment as long as first four together; claws simple. *Genitalia* as figured (figs. 36 and 37), not very elongate. Tegmen with wide, shallow, V-shaped apical excision between short, widely rounded lateral lobes; median lobe narrowed from basal third, apex rounded with the appearance of a shallow terminal sinuation.

Female.—Apex of each elytron very slightly more obliquely truncate; front tarsi two-thirds as wide as antennal club; legs and antennae on an average darker; metasternum triangularly flattened, with a median longitudinal linear impression. Ovipositor (fig. 96) pitchy reddish-brown with apex piceous, its short styli inserted laterally at extreme apex, and projecting beyond it; coxites with outer subdivisions short and broad, inner with their outer basal angle narrowly produced; transverse suture somewhat V-shaped; "central point" at about one-third from apex, without a ventral spicule. Spermatheca spherical.

Type ♂, TANGANYIKA : Kilimandjaro, 11,000–12,000 ft., on *Helichrysum splendidum* (Thunb.) Less. (Compositae), 17–18.i.1955 (*B. Verdcourt*) ; in the author's collection.

Paratypes, TANGANYIKA : Kilimandjaro, 11,000–12,000 ft., on *Helichrysum splendidum* (Thunb.) Less., 17–18.i.1955 (*B. Verdcourt*), 5 ♂, 3 ♀ ; in the author's collection. UGANDA : N. Bugishu, 8,000 ft., abundant on " everlasting flowers " (Compositae), 12.i.30, (*H. Hargreaves*), 7 ex.; in the Commonwealth Institute of Entomology.

Additional material.—UGANDA : Mt. Elgon, 9,000 ft., bamboo zone, on *Vernonia* sp. (Compositae), 7.iii.34 (*H. B. Johnston*), 35 ex.; Mt. Elgon, 8,000 ft., on flowers of *Helichrysum*, iii.34 (*H. B. Johnston*), 199 ex.; in British Museum (Natural History).

Biology.—Active i, iii, at 8,000–12,000 ft. The flowers from which it is recorded are not likely to be its true host.

Variations.—Length 1·9–2·6 mm. Colour varies from green, often with a slight aeneous reflection, to dark greenish-blue or blue ; specimens from Uganda have the appendages darker than those from Kilimandjaro, a feature noted in both the preceding and following species.

Comparative notes.—Extremely similar to *sjöstedti*, but much smaller, and with the elytral punctures slightly larger and closer. The sides of the pronotum are slightly less widely explanate, and the genitalia show the minor differences noted in the key. Also very similar to *subcaeruleus*, but its elytra are not acuminate at the apex, its genitalia are distinct, and its spermatheca globular.

Meligethes sjöstedti Grouvelle

M. sjöstedti Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–06, **1** : 317.
M. schröderi Grouvelle, 1911, *Bull. Soc. ent. Fr.* 1911 : 66, **syn. nov.**

The type specimen (♂) of *M. sjöstedti* from TANGANYIKA : Kilimandjaro, Kiboscho, 3,000–4,000 m., ii (*Sjöstedt*), is in the Naturhistoriska Riksmuseum, Stockholm ; with it is a smaller green example from the same locality which Grouvelle had labelled as a variety.

In erecting *M. schröderi*, Grouvelle failed to mention the earlier *sjöstedti*, even though the two descriptions tallied very closely. The type of *schröderi* from Kilimandjaro, 3,000 m. (*Schröder*), is in the Muséum National d'Historie Naturelle, Paris. Comparison with that of *sjöstedti* shows them to agree externally exactly, save that *schröderi* is greenish-brassy in colour, whilst *sjöstedti* is dark bluish with a faint greenish-bronze reflection.

Other material examined includes : TANGANYIKA : Kilimandjaro, x.1904 (*Katona*), 8 ex., in the Hungarian National Museum. KENYA : Aberdare Range, Nyeri Track, 10,500–11,000 ft., 28.x.34 (*F. W. Edwards*, B. M. East Afr. Exp.), 4 ex., in British Museum (Natural History). UGANDA : Mt. Elgon, 3,000–3,760 m., 26–29.xii.25 (*Alinder*), 2 ♂, 3 ♀, in the Zoologische Sammlung des Bayerischen Staates, München ; Mt. Elgon, 11,000 ft., on flowers of *Helichrysum*, 5.iii.34, 1 ex., and 12,000 ft., in alpine zone on flowers of *Helichrysum*, 10.iii.34, 19 ex. (*H. B. Johnston*), in British Museum (Natural History).

Elongate oval, head as long as wide excluding eyes ; pronotum twice as wide as long, usually widest at basal fourth, but somewhat variable ; elytra nearly half as long again as wide ; antennal club elongate, two and a half times as wide and twice as long as first antennal segment ; clypeus with front margin widely shallowly emarginate with side angles sharp. Punctures on head slightly larger than eye facets separated by half a diameter, on pronotum equal to eye facets separated by one to one and a half diameters ; those of elytra smaller, shallower, somewhat triangular, separated by one and a half to two diameters, the surface between them throughout with more or less well-marked reticulation comprising small convex polygonal cells. Front tibiae (fig.1) gradually

widened to apex, here one and two-thirds times as wide as antennal club, outer edge almost straight, scarcely crenulate, with three minute teeth close together at outer apical angle. *Male:* front tarsus very nearly as wide as antennal club; metasternum triangularly flattened and in its hind two-thirds with a deep median longitudinal depression wider than antennal club; last sternite simple. Aedeagus as figured (figs. 38 and 39); tegmen with shallow concave apical excision between short rounded lateral lobes; median lobe narrowed from apical third to its bluntly pointed apex, where is a minute terminal notch. *Female:* front tarsi three-quarters as wide as antennal club; metasternum simple. Ovipositor (fig. 97) pitchy reddish-brown, with apex deeply pigmented; its short styli at a distance from the apex equal to half their length, projecting beyond it; coxites with inner subdivisions pigmented only at apex, down mid-line, and narrowly across base; outer broad and short; "central point" at apical third, without a ventral spicule; transverse suture as a very flat V.

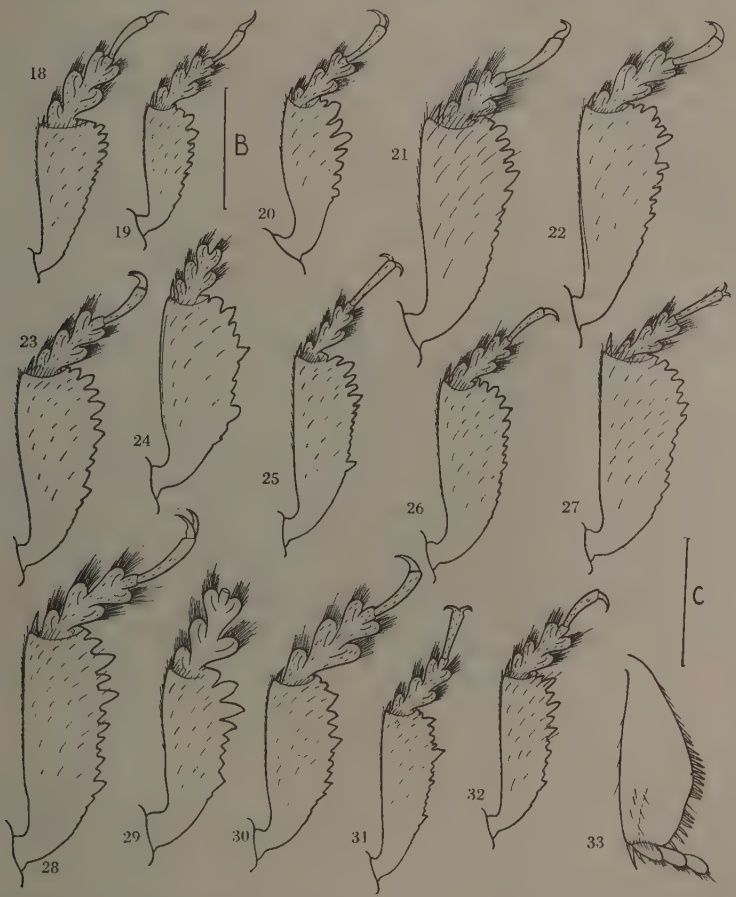
Variations.—Length 2·6–3·9 mm.; most variable is the general aspect of the upper surface, which may appear polished and shining (especially in the series from Aberdare Range), somewhat crinkled, or, where the reticulation between punctures is particularly well marked, having a fine silvery sheen most evident on the elytra; colour varies from dark blue to dark green, generally with some degree of aeneous reflection, usually with explanate side borders of pronotum reddish; typically with legs reddish, and apex of scutellum more or less bluntly pointed. In those from Mount Elgon the legs are almost entirely black, the pronotum unicolorous, and apex of scutellum quite rounded off. Whether these features are of subspecific value cannot be decided on so short a series.

Meligethes carbunculus sp. n.

Male.—Length, 1·25; breadth, 0·7 mm. Elongate oval, narrowed posteriorly, moderately convex, very shining black, with extremely short inconspicuous pubescence, almost glabrous; legs piceous. *Head* strongly transverse, slightly convex; clypeus with front margin slightly convex, its side angles rounded; surface with deep punctures as large as eye facets separated by one to one and a half diameters, spaces between them smooth. Antennae pitchy yellow with segment one, and club, darker; club oval, two and a half times as wide and two and a half times as long as first antennal segment. *Pronotum* transverse, twice as wide as long (0·7 : 0·35 mm.), widest at basal fifth, and here slightly wider than elytra; its sides gently rounded and more convergent anteriorly, somewhat strongly bordered. Anterior margin feebly convex medially, curving forward slightly at each end to blunt obtuse front angles. Hind margin longer than front (0·65 : 0·4 mm.), widely and feebly sinuate on either side of scutellum; hind angles obtusely pointed. Surface with punctures slightly smaller than eye facets, separated by two to three diameters, spaces between them smooth. *Elytra* as long as wide (0·65 mm.), their strongly bordered sides feebly curved and somewhat strongly convergent posteriorly; hind angles widely rounded; apices separately, somewhat obliquely rounded; sutural angles obtusely pointed. Shoulders feebly raised, without a stria. Surface with minute punctures, half as large as eye facets, separated by about four diameters, each joined to its lateral neighbours by fine aciculation, spaces between them smooth. *Scutellum* subtriangular, its surface transreticulate, with a few punctures similar in size to those of pronotum. *Pygidium* with surface minutely punctured and closely aciculate. *Ventral surface* with prosternal process slightly wider than antennal club, bordered at sides, with rounded apex, its punctures smaller than eye facets separated by one to two diameters, surface between them smooth. Metasternum with punctures equal in size to eye facets separated by one to three diameters, surface between them smooth. Abdominal sternites much more finely punctate, and with surface reticulate. Caudal marginal line of hind coxal cavity following posterior edge of the latter and turning back some little distance before reaching its outer end. Without secondary sexual characters. *Legs* pitchy reddish-yellow, with claws black. Front tibiae gradually broadened to apex, here three-quarters as wide as antennal club; outer edge with scarcely visible crenulations from basal third. Intermediate and hind tibiae one and a half times as wide as front, their inner edge strongly convex at basal third, outer edge furnished with a single row of fine close downwardly directed bristles. Front tarsi half as wide as antennal club, intermediate and hind one-third as wide; last segment as long as first four together; claws simple. *Genitalia* as figured (figs. 40 and

41). Tegmen with large V-shaped apical excision between bluntly pointed lateral lobes ; median lobe pointed.

Female.—Not differing externally from male. Ovipositor (fig. 98) with apex deeply pigmented ; its very long styli inserted on a membranous base very close to apex, the sensory hairs on, and external to, them exceptionally long ; outer subdivisions of coxites short and broad ; " central point " almost central ; transverse suture as a very flat V.



FIGS. 18–32.—Right front tibia: (18) *Meligethes cornutus* sp. n. (19) *M. clypeonitens* sp. n. (20) *M. heteropus* Gerstaecker. (21) *M. pilosus* sp. n. (22) *M. hargreavesi* sp. n. (23) *M. hintoni* sp. n. (24) *M. profugus* sp. n. (25) *M. mimetes* Grouvelle. (26) *M. perfectus* sp. n. (27) *M. imperfectus* sp. n. (28) *M. rileyi* sp. n. (29) *M. amplimanus* sp. n. (30) *M. lepelleyi* sp. n. (31) *M. johnstoni* sp. n. (32) *M. patiens* sp. n. Scale B = 0·25 mm.

FIG. 33.—Right intermediate tibia of *Meligethes johnsi* sp. n. Scale C = 0·70 mm.

Type ♂, TANGANYIKA : East Usambara Mountains, Amani, on *Nicodemia* (Loganiaceae), 28.viii.50 (*B. Verdcourt*) ; in the author's collection.

Paratypes, TANGANYIKA : same data, 1 ♂, 3 ♀ ; in the same collection.

Variation.—Length varies from 1·25 to 1·45 mm.

Comparative notes.—Showing slight superficial resemblance to *M. johnsi* sp. n., but distinguished by the absence of a well-formed tooth on the outer edge of the front tibia.

Meligethes assutus sp. n.

Female.—Length, 1·9 ; breadth, 0·95 mm. Elongate, somewhat rounded at sides, moderately convex, shining black, with a large obliquely oval yellow patch on each elytron, with fine yellowish pubescence ; antennae piceous, legs pitchy yellow. *Head* strongly transverse, convex ; clypeus with front margin straight, very narrowly yellowish ; surface with deep punctures, almost equal to eye facets, separated by one diameter, spaces between them smooth. Antennae piceous, with segment two yellowish, club darker ; club oval, two and a quarter times as wide and nearly twice as long as first antennal segment. *Pronotum* black with side borders and base narrowly yellowish ; transverse, one and three-fifths times as wide as long (0·85 : 0·5 mm.), widest at extreme base ; its sides convergent, straight in basal third, then gently rounded anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·85 : 0·55 mm.), narrowly sinuate on either side of scutellum, slightly oblique at each end towards the obtusely pointed hind angles. Surface with punctures smaller than eye facets, separated by one and a half to two diameters, but absent along a narrow zone at each end of base ; spaces between them smooth. *Elytra* black, with a central oval yellowish patch almost attaining the suture in its third fourth, the side margin in its mid-third, and the posterior edge of the humeral prominence ; longer than wide (1·15 : 0·95 mm.), widest in mid-third, sides narrowly bordered, gently rounded and convergent posteriorly ; hind angles widely rounded off, apices slightly oblique and more rounded close to the obtusely pointed sutural angle. Shoulders weakly raised. Punctures about equal in size to eye facets, but each is deeper and better defined at its anterior edge, shallower and evanescent posteriorly, separated in the transverse direction by one diameter, in the antero-posterior by one and a half, thus producing a feeble transrugosity ; surface between them smooth, but becoming reticulate in apical third. *Scutellum* with rounded apex, closely and very finely punctate, minutely reticulate. *Ventral surface* black, with hind margins of metasternum and abdominal segments one to three narrowly reddish-yellow. Prosternal process narrow, scarcely wider than antennal club, rounded at apex, its sides bordered, with minute punctures much smaller than eye facets separated by two to three diameters, surface between them smooth. Mesosternum impunctate, minutely transreticulate. Metasternum with punctures as small as those of prosternal process, separated by three diameters, surface with faint aciculation radiating from them. Abdomen with all segments minutely and somewhat closely punctate, distinctly reticulate ; last sternite with well-marked curved impressed lines typical of the genus. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. *Legs* pitchy yellow. Front tibiae (fig. 2) narrow, as wide as antennal club, outer edge with minute crenulations gradually developing into small, sharp, subequal teeth in distal third ; subtarsal plate narrow. Intermediate and hind tibiae broader, their outer edges gently rounded and furnished from base to apex with close fine downwardly directed pegs ; inner edge convex, mostly at basal third, not bordered. Front tarsi less than half, intermediate and hind one-third, as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* as figured (fig. 99). Ovipositor unicolorous reddish-yellow ; apex narrowly subtruncate, its short styli inserted very close to, and projecting beyond, it ; coxites somewhat specialised, their outer subdivisions articulating closely with the inner and with a sharp spinous angle on their outer edge ; " central point " at apical third, without a ventral spicule ; transverse suture straight.

Male.—Unknown.

Type ♀, KENYA : Muguga, on *Aspilia* sp. (Compositae), vi.1954 (*B. Verdcourt*). Unique, in the author's collection.

Comparative notes.—The peculiar form of the coxites of *M. assutus* is so far without parallel in the genus, and its true taxonomy remains doubtful.

Meligethes edwardsi sp. n.

Female.—Length, 2·5 ; breadth, 1·6 mm. Oval, somewhat strongly convex, castaneous, with head except clypeus darker, slightly shining, with long, fine, conspicuous, yellow pubescence ; legs red-brown. *Head* transverse, feebly convex ; clypeus with its anterior margin strongly bordered, shallowly sinuate in the middle, with side angles widely rounded ; surface with punctures equal in size to eye facets, separated by less than half a diameter, spaces between them smooth.

Antennae with segments one to three reddish-yellow, distal parts reddish-brown ; club one and two-thirds times as long and two and a third times as wide as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (1·4 : 0·9 mm.), widest at hind angles, here very slightly narrower than elytra ; sides convergent, almost straight to anterior third, then rounded inwards, very narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the bluntly rounded front angles. Hind margin longer than front (1·4 : 0·85 mm.), convex, projecting slightly backwards over base of scutellum, and strongly sinuate on either side of this ; hind angles blunt, obtuse. Surface with punctures equal in size to eye facets, separated by one to one and a half diameters, spaces between them smooth ; punctures not quite attaining base at its outer ends. *Elytra* as long as wide (1·6 mm.), widest at basal fourth, sides distinctly bordered, moderately rounded, and convergent towards the widely rounded hind angles ; sutural angles sharp, obtuse ; apex of each elytron gently rounded. Shoulders moderately raised. Surface with slightly elongate punctures, twice as large as those of pronotum, separated by about one diameter, spaces between them with distinct microscopic reticulation consisting of very small polygonal cells. *Scutellum* with punctures slightly smaller than eye facets, separated by one diameter, surface between them minutely reticulate. *Ventral surface* concolorous with upper. Prosternal process broadened to apical angles, here twice as wide as antennal club, apex convex, subtruncate, sides bordered ; its punctures equal in size to eye facets, separated by half to one diameter, surface between them smooth. Mesosternum unpunctured, minutely reticulate, its centre raised and flattened. Metasternum with punctures scarcely larger than eye facets, separated by one to one and a half diameters, surface between them smooth. Abdomen with first sternite similarly punctured, succeeding segments much more finely punctate. Caudal marginal line of hind coxal cavity following very closely posterior edge of the latter and turning backwards shortly before reaching its outer end. Last ventral segment simple. *Legs* unicolorous reddish-brown. Front tibiae (fig. 3) not strongly dilated, with teeth, nearly twice as wide as antennal club, outer edge crenulate to beyond first third, then with a subapical group of five, sharp, downwardly directed teeth, the first small, the second and third almost as large as the penultimate, the last smaller ; subtarsal plate not conspicuous. Intermediate and hind tibiae broader, their outer edges furnished from basal third with a single row of downwardly directed pegs, finer and closer on the hind pair. Inner edge of front and intermediate tibiae almost straight, of hind convex at basal third, extremely narrowly bordered. Front tarsi half as wide as antennal club, intermediate and hind slightly narrower ; last segment as long as first four together ; claws with a strong basal tooth. *Genitalia* as figured (fig. 100). Ovipositor unicolorous yellowish ; its long styli inserted very close to the somewhat blunt apex ; subapical setae exceptionally long ; outer subdivisions of coxites short ; " central point " at third fifth ; transverse suture almost straight.

Male.—Unknown.

Type ♀, UGANDA : Ruwenzori Range, Namwamba Valley, 6,500 ft., xii.34–i.35 (*F. W. Edwards*, B. M. East Afr. Exp.) ; in British Museum (Natural History).

Paratype, BRITISH EAST AFRICA : Farm Karundu, 1910 (*Gotsch*), 1 ♀, in the author's collection, *ex* Naturhistorisches Museum, Wien.

Comparative notes.—Possibly in fact a member of the *gloriosus* species-group, though proof must await the identification of the male. From those species of the group in which the tarsal claws are toothed, *edwardsi* is at once distinguishable by its conspicuous pubescence.

Meligethes incognitus Grouvelle

M. incognitus Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–06, 1 : 314.

I have examined the unique type specimen in the Naturhistoriska Riksmuseum, Stockholm, bearing Grouvelle's manuscript name and the data : " Kilimandjaro, Sjöstedt, 1905–6 ", " 9.xi ". A male, it agrees well with his description.

Colour dark ferrugineous, head piceous ; front margin of clypeus deeply sinuate in middle with side angles rounded ; shallow punctures of elytra smaller than eye facets and ranged along

subtransverse impressed lines, each separated from its neighbours in the same row by about two and a half diameters and from those in adjacent rows by four diameters. Surface between punctures smooth. Not mentioned by Grouvelle are the strong teeth at base of each tarsal claw and the male secondary sexual characters, consisting of a minute shining tubercle at apex of last sternite, and a narrow raised median longitudinal ridge on metasternum in third fourth. Aedeagus as figured (figs. 42 and 43). Tegmen with V-shaped apical excision, the broad rounded lateral lobes each bearing a tuft of long sensory hairs; median lobe parallel-sided with simply rounded apex.

Superficially *incognitus* is strongly reminiscent of *spissus* Grouvelle, but differs in its lighter colour, its more conspicuous pubescence, its finer punctures, and above all in its toothed tarsal claws and entirely different aedeagus.

Meligethes spissus Grouvelle

M. spissus Grouvelle, 1908, *Ann. Mus. civ. Genova* **44**: 76.

Co-types (♂ and ♀) from Abyssinia in the Muséum National d'Histoire Naturelle, Paris.

This species has previously (Easton, 1959) been dealt with at length, and attention called to the curious form of the median lobe of its aedeagus. This structure is of very similar form in the next following species (fig. 45), as also in the unrelated *M. curvipes* Grouvelle from India.

Tanganyika: Victoria Nyanza (Sin. Mara.), iv.1909 (*Katona*), 1 ♀; Moshi, Fl. Rau, viii.1907 (*Katona*), 1 ♂; in the Hungarian National Museum.

Meligethes kulalensis sp. n.

Male.—Length, 2·3; breadth, 1·25 mm. Long oval, moderately convex, shining black, with sparse fine silvery pubescence; antennae and legs brownish-yellow. *Head* transverse, feebly convex; clypeus with anterior margin bordered, widely sinuate with side angles rounded; surface with deep punctures equal in size to eye facets, separated by half to one diameter, spaces between them smooth. Antennae brownish-yellow, segment two lighter; club oval, nearly twice as long and twice as broad as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·1 : 0·65 mm.), widest close to base; its sides scarcely rounded and feebly convergent to anterior third, then curving strongly inwards; with a well-marked border, scarcely explanate. Anterior margin straight for width of neck, curving forward at each end to the rounded obtuse front angles. Hind margin longer than front (1·1 : 0·7 mm.), weakly convex, feebly sinuate on either side of scutellum, and at its ends curving gently forward to the blunt obtuse hind angles. Surface with deep punctures very slightly larger than eye facets, separated by about one and a half diameters, but absent from a narrow zone close to base at its outer ends; spaces between punctures smooth, except faintly reticulate close to the basal sinuations. *Elytra* longer than wide (1·4 : 1·25 mm.), widest at basal fourth, sides with well-marked border, gently rounded, convergent posteriorly to the widely rounded hind angles; apex of each feebly rounded, sutural angles sharply obtuse. Shoulders prominent, without a humeral stria. Surface strongly transrugose, its punctures equal in size to those of pronotum, arranged along undulating transverse declivities, separated from those on either side by one diameter, from those of adjacent rows by two and a half diameters; from each puncture a single recumbent hair just reaches the row behind; spaces between rows smooth. *Scutellum* with apex widely rounded; finely diffusely punctate, with surface aciculation. *Pygidium* with surface granular. *Ventral surface* black. Prosternal process scarcely broader than antennal club, with rounded apex, sides bordered; its surface granular at base, smooth with fine discrete punctures towards apex. Mesosternum impunctate, minutely cross-reticulate. Metasternum with shallow punctures smaller than eye facets separated by one and a half to two diameters, spaces between them irregularly reticulate; secondary sexual character consisting of two sharply raised paramedian parallel ridges in the mid-third, the shallow furrow between them shining and free of punctures. Abdomen with all ventral segments minutely, diffusely, punctate, surface distinctly microscopically reticulate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter, turning back shortly before reaching its outer end. Last sternite without secondary sexual character. *Legs* brownish-yellow, slightly piceous. Front tibiae (fig. 4)

not strongly dilated, one and two-thirds times as wide as antennal club ; outer edge scarcely crenulate to middle, towards apex are four sharp downwardly directed teeth, of which the third and fourth are longest ; subtarsal plate moderately conspicuous. Intermediate and hind tibiae moderately dilated, former with outer edge more evenly rounded, widest at distal third, latter with outer edge almost straight to apical fourth, with close downwardly directed pegs from basal third. Inner edge of front and intermediate tibiae almost straight, of hind convex at basal third; not bordered. Front tarsi three-quarters, intermediate and hind two-thirds, as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* short and broad. Tegmen (fig. 44) with wide round apical excision and bluntly pointed lateral lobes. Median lobe (fig. 45) much expanded to apical third then sinuately contracted to its rounded apex ; a flat lobule projects on either side close to apex, but on a more ventral plane.

Female.—Not known.

Type ♂, KENYA : North Frontier Province, Mt. Kulal, 6,500 ft., on *Pentas lanceolata* (Forsk.) Defl. (Rubiaceae), 26.vii.58 (*B. Verdcourt*) ; in the author's collection. Unique.

Comparative notes.—Very closely related to *M. spissus* Grouvelle, but easily distinguished on the characters noted in the key. The lateral lobes of its tegmen are rather more pointed and its median lobe more expanded.

—— *Meligethes rubiginosus* Grouvelle

M. rubiginosus Grouvelle, 1908, *Rev. Ent. Caen* **27** : 8.
M. ferruginascens Grouvelle, 1908, *Rev. Ent. Caen* **27** : 9, **syn. nov.**

The single specimen on which Grouvelle based his description of *M. ferruginascens* was taken at the same time and place as the series which he had named *rubiginosus*. On comparison with a co-type of the latter it is quite evident that they are conspecific.

TANGANYIKA : Dar-es-Salaam, v, vi. A male in the author's collection from ZANZIBAR : Jozani, 29.vi.49, off ? *Triumfetta* sp. (Tiliaceae) (*D. L. Johns*).

Antennal club small, one and a half times as long and two and a quarter times as wide as first antennal segment. Pronotum with base obliquely truncate at each end, adjacent surface unpunctured and shining. Claws with a small tooth at base, more evident on intermediate and hind tarsi ; intermediate and hind tibiae with inner edge convex. Prosternal process broad, two and a half times as wide as antennal club, its apex flatly rounded. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter, turning back some little distance before reaching its outer end. *Male :* front tarsi (fig. 5) two-thirds as wide as antennal club ; metasternum and last sternite without secondary sexual characters. Aedeagus with median lobe (fig. 47) gradually narrowed towards its rounded apex ; tegmen (fig. 46) with apical excision appearing as an angular notch between short rounded lateral lobes. *Female :* front tarsi half as wide as antennal club. Ovipositor (fig. 101) unicolorous reddish-yellow, bluntly pointed; styli and subapical setae very long, former more than four times as long as wide, inserted close to apex; coxites with outer subdivisions short, inner with apical portion convergent, their outer basal angle rounded ; " central point " central, without a ventral spicule ; transverse suture straight.

Meligethes johnsi sp. n.

Male.—Length, 1·45 ; breadth, 0·9 mm. Oval, moderately convex, black with a trace of reddish, pubescence very inconspicuous, sparse and shorter than punctures ; antennae and legs pitchy brown. *Head* transverse, feebly convex ; clypeus with anterior margin bordered, somewhat deeply sinuate in mid-third, rounded at sides ; surface with punctures slightly smaller than eye facets, separated by about two diameters, spaces between them closely reticulate. Antennae pitchy brown, segments one and two slightly paler ; club oval, one and a half times as long and two and a quarter times as wide as first antennal segment. *Pronotum* strongly transverse, twice as wide as long (0·85 : 0·45 mm.), widest at base ; sides convergent, almost straight posteriorly curving inwards in anterior third, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·85 : 0·55 mm.), strongly sinuate on either side of scutellum, and curving

obliquely forward at each end to the obtusely pointed hind angles. Surface with shallow punctures equal in size to those of head, separated by two to two and a half diameters, spaces between them with distinct reticulation consisting of minute polygonal cells; punctures absent from a narrow zone along each end of base. *Elytra* as long as broad (0·85 : 0·9 mm.), widest at basal fifth and tapering somewhat towards the widely rounded hind angles; sides narrowly bordered; apex of each subtruncate; sutural angle obtusely pointed. Shoulders scarcely raised, without a humeral stria. Surface feebly rugose, with very shallow punctures, scarcely half as large as eye facets, separated by about four diameters, spaces between them with well-marked reticulation consisting of minute cells tending to radiate from the punctures. *Scutellum* rounded at apex, its surface reticulate, with a few minute punctures. *Pygidium* with surface granulo-reticulate, and finely punctate. *Ventral surface* concolorous with dorsal. Prosternal process twice as wide as antennal club, with apex flatly rounded, sides strongly bordered, surface smooth with minute discrete punctures. Mesosternum with surface impunctate, minutely transreticulate. Metasternum with punctures one quarter as large as eye facets, separated by three or four diameters, surface between them with shallow radiating aciculation; with a shallow median longitudinal depression as wide as antennal club occupying its mid-third. Abdominal sternites with surface reticulation, first punctured as metasternum, succeeding segments more closely so. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. Apex of last sternite with a minute well-defined smooth shining area, concave from side to side, twice as wide as long, its width half that of antennal club. *Legs* pitchy brownish. Front tibiae (fig. 6) weakly dilated, one and a half times as wide, with tooth, as antennal club; outer edge scarcely crenulate from middle, with a single large sharp downwardly directed tooth beyond which a smaller rounded tooth is situated very close to the narrow subtarsal plate. Intermediate and hind tibiae broadened to apical third and fourth respectively, their outer edges closely furnished with downwardly directed pegs; on the former (fig. 33) these are lacking for a short distance beyond widest point and replaced by a single fine seta inserted in a short emargination. Inner edge of front tibiae almost straight, of intermediate and hind gently convex. Front tarsi two-thirds, others half, as wide as antennal club; last segment slightly shorter than first four together; claws simple. *Genitalia* subparallel. Tegmen (fig. 48) with large apical excision between narrowly rounded lateral lobes; median lobe (fig. 49) bluntly pointed.

Female.—Metasternum and last ventral segment of abdomen simple. Tarsi and intermediate tibiae as in male. Ovipositor (fig. 102) reddish-yellow with apex dark piceous; styli four times as long as wide, inserted terminally on rounded membranous apex of inner subdivision of each coxite; outer subdivision of coxites short and broad; " central point " at third seventh; transverse suture widely V-shaped.

Type ♂, ZANZIBAR: Jozani, on *Kyllinga* sp. (Cyperaceae), 27.iv.49 (*D. L. Johns*); in author's collection.

Paratypes, ZANZIBAR: same data, 3 ex. including 1 ♂, 1 ♀; in the author's collection.

Variation.—No appreciable variation is to be noted in this small series.

Comparative notes.—*M. johnsi* is at once recognisable by its small size, by the single subapical tooth on the outer edge of its front tibia, by its finely diffusely punctate and microscopically reticulate upper surface, and above all by the gap in the row of pegs on the outer edge of the intermediate tibia in both sexes. Its ovipositor is much like that of the two preceding and of the two following species, a similarity probably of taxonomic importance.

Tanga

v Meligethes pentasi sp. n.

Male.—Length, 1·8; breadth, 1·2 mm. Oval, rather strongly convex, dark castaneous, with base of head black, pubescence very inconspicuous, shorter than punctures; antennae yellowish-brown, legs reddish-brown. *Head* strongly transverse, feebly convex; clypeus with anterior margin strongly bordered, narrowly sinuate in middle, sides widely rounded; surface with deep punctures slightly smaller than eye facets, separated by one diameter, spaces between them smooth. Antennae yellowish-brown, second segment yellow; club small and narrow, one and a half times as long and one and a half times as wide as first antennal segment. *Pronotum* nearly twice as wide as long (1·15 : 0·65 mm.), widest at base; sides convergent, almost straight posterior-

ly, curving inwards in anterior half, narrowly bordered, not explanate. Anterior margin straight for width of neck curving slightly forward at each end to the rounded-off front angles. Hind margin longer than front (1·15 : 0·8 mm.), strongly sinuate on either side of scutellum, and curving obliquely forward at each end to the obtusely pointed hind angles. Surface with punctures slightly smaller than those of head, shallower, separated by one and a half diameters, spaces between them smooth; punctures absent from a narrow zone along oblique ends of base. *Elytra* scarcely wider than long (1·2 : 1·1 mm.), widest at basal fifth, and narrowing somewhat towards the widely rounded hind angles; sides narrowly bordered; apices gently rounded; sutural angles obtusely pointed. Shoulders weakly raised, without a humeral stria. Surface with a trace of transrugosity, punctures shallow, equal in size to eye facets, separated by about one and a half diameters, spaces between them smooth. *Scutellum* transverse, with apex subtruncate; surface transversely reticulate, with fine somewhat close punctures. *Pygidium* with surface closely granulate. *Ventral surface* concolorous with upper, but darker towards apex of abdomen. Prosternal process two and a half times as wide as antennal club, surface non-reticulate with punctures smaller than eye facets separated by half a diameter and absent close to the subtruncate apex, sides strongly bordered. Mesosternum impunctate. Metasternum with punctures slightly smaller than eye facets separated by one and a half diameters, surface between with a trace of aciculation radiating from them. Abdomen with sternites finely, not very closely punctate, and with surface reticulation. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back at its outer third. Metasternum and last sternite without secondary sexual characters. *Legs* reddish-brown. Front tibiae (fig. 7) narrow, twice as wide as antennal club, outer edge crenulate from middle, with two sharp subequal teeth before apex; subtarsal plate narrow. Intermediate and hind tibiae almost twice as wide, their outer edges roundly angled at apical third and fourth respectively, and furnished with fine close downwardly directed pegs. Inner edge of front tibiae almost straight, of intermediate and hind moderately evenly convex, not bordered. Front tarsi narrow, three-quarters as wide as antennal club, intermediate and hind two-thirds as wide; last segment as long as first four together; claws simple. *Genitalia* rather short. Tegmen (fig. 50) with deep narrow apical excision between rounded lateral lobes; median lobe (fig. 51) with apex almost rounded.

Female.—Tarsi nearly two-thirds as wide as antennal club. Ovipositor with apex piceous, coxites with the exposed half of their inner subdivisions subparallel, outer subdivisions short and broad; styli four times as long as wide, inserted almost at extreme apex; " central point " at two-fifths from base.

Type ♂, TANGANYIKA: Mt. Mlinga, E. Usambaras, on *Pentas bussei* Krause (= *P. coccinea* Stapf.) (Rubiaceae), 17.viii.50 (*B. Verdcourt*); in the author's collection.

Paratypes, TANGANYIKA: same data, 2 ♂, one immature. Mpwapwa, 4, 000ft., found in a herbarium specimen of *Pentas bussei* Krause, 3.iii.41 (*B. Verdcourt*), 1 ♀, very immature and crushed; in the author's collection.

Biology.—Young adults are active in March, and a new generation in August. It appears likely that *Pentas bussei* Krause constitutes the host-plant.

Comparative notes.—Readily distinguished from the following species by the characters noted in the key. Having the form of ovipositor typical of the *spissus* species-group, but in the male differing in having no underside secondary sexual characters. Its small antennal club is a noticeable feature.

Meligethes varus sp. n.

Male.—Length, 1·9; breadth, 1·0 mm. Elongate oval, moderately convex, pitchy black, shining, with fine yellowish pubescence; antennae and legs pitchy brown. *Head* transverse, feebly convex; clypeus with front margin bordered, straight, its side angles rounded; surface with punctures slightly smaller than eye facets, separated by one diameter, spaces between them smooth. Antennae pitchy brown with club darker; latter oval, one and a half times as long and twice as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (0·9 : 0·5 mm.), widest close to base; its sides subparallel to the middle, rounded and convergent anteriorly, extremely finely bordered, not explanate. Anterior margin straight for width of neck, curving forward feebly at each end to the blunt obtuse front angles. Hind margin longer than

front (0·9 : 0·65 mm.), almost straight, but feebly sinuate on either side of scutellum ; hind angles obtusely pointed. Surface with deep punctures equal in size to eye facets, separated by one and a half diameters, surface between them smooth. *Elytra* scarcely longer than their greatest width at basal fourth (1·1 : 1·0 mm.), sides narrowly bordered, gradually rounded and convergent towards the widely rounded hind angles, apex of each feebly rounded, sutural angle sharp obtuse. Shoulders moderately raised, without a humeral stria. Surface with a trace of transrugosity, the deep punctures slightly larger than eye facets, separated by one diameter from their lateral neighbours, by one and a half diameters from those before or behind ; spaces between punctures smooth, except for fine aciculate lines connecting punctures of each transverse row. *Scutellum* with apex widely rounded, surface reticulate and with close punctures half as large as eye facets. *Pygidium* finely granular, closely pubescent. *Ventral surface* black, with head, hind margin of sternites one to five, and last sternite entirely pitchy brown. Prosternal process narrow, scarcely wider than

Figs. 34–57.—Aedeagi. (34) *Meligethes subcaeruleus* Grouvelle, tegmen, dorsal view ; (35) the same, median lobe, dorsal view. (36) *M. gemma* sp. n., tegmen ; (37) the same, median lobe. (38) *M. sjöstedti* Grouvelle, tegmen ; (39) the same, median lobe. (40) *M. carbunculus* sp. n. tegmen ; (41) the same, median lobe. (42) *M. incognitus* Grouvelle, tegmen ; (43) the same, median lobe. (44) *M. kulalensis* sp. n., tegmen ; (45) the same, median lobe. (46) *M. rubiginosus* Grouvelle, tegmen ; (47) the same, median lobe. (48) *M. johnsi* sp. n., tegmen ; (49) the same, median lobe. (50) *M. pentasi* sp. n., tegmen ; (51) the same, median lobe; (52) *M. varus* sp. n., tegmen ; (53) the same, median lobe. (54) *M. leucasi* sp. n., tegmen . (55) the same, median lobe. (56) *M. fulvidus* Grouvelle, tegmen ; (57) the same, median lobe. Scale D = 0·25 mm.

antennal club, its apex subtruncate; with distinct side borders; surface smooth with a few fine discrete punctures. Metasternum with punctures equal in size to eye facets, separated by half to one diameter, spaces between them smooth; the secondary sexual character consists of two shining raised paramedian longitudinal ridges occupying the third fourth, the furrow between them as wide as prosternal process and finely punctate and pubescent. Abdomen with sternites very finely, somewhat closely, punctate, and with surface aciculate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning backwards shortly before reaching its outer end. Last ventral segment with a minute, scarcely raised, shining tubercle at its apex. *Legs* pitchy brown. Front tibiae (fig. 8) not strongly dilated, one and two-thirds times as wide as antennal club; outer edge scarcely crenulate to apical third, then with three small sharp downwardly directed teeth; subtarsal plate somewhat narrow. Intermediate tibiae with outer edge rounded, slightly dilated to apical third; hind tibiae not dilated, outer edge with close downwardly directed pegs, finer and shorter than those of intermediate tibiae. Inner edge of front and intermediate tibiae straight, of hind gradually sinuate in distal half, not perceptibly bordered. Front tarsi two-thirds, intermediate and hind half, as wide as antennal club; last segment slightly shorter than first four together; claws simple. *Genitalia* elongate, subparallel. Tegmen (fig. 52) with a wide U-shaped apical excision, and somewhat narrow, elongate, bluntly pointed lateral lobes; median lobe (fig. 53) with pointed apex.

Female.—Front tarsi half, intermediate and hind one-third, as wide as antennal club; inner edge of hind tibiae not sinuate. Metasternum and last sternite simple. Ovipositor (fig. 103) small, with apical portion and styli deeply piceous; styli very long, four times as long as wide, somewhat clavate, inserted almost at extreme apex; coxites with outer subdivisions short and broad; " central point " slightly nearer to base than apex; without a ventral spicule; transverse suture straight.

Type ♂, KENYA: Muguga (16 miles W. of Nairobi), on *Pentas lanceolata* (Forsk.) Defl. (Rubiaceae), 18.iv.56 (*B. Verdcourt*); in the author's collection.

Paratypes, KENYA: same data, 5 ♂, 6 ♀; Muguga, from the same botanical species, 28.v.52 (*B. Verdcourt*), 1 ♀. TANGANYIKA: Shume, W. Usambaras, in flower of *P. carnea* Benth. aggreg., 13.viii.50 (*B. Verdcourt*), 1 ♀; in the author's collection.

Variation.—In some examples the elytral transrugosity is poorly marked, in others quite distinct.

Biology.—Many of the specimens taken in April, as well as that found in August, are immature; the May female is well matured. It seems likely that *Pentas* spp. fill the rôle of host-plant.

Comparative notes.—Closely related to, and in many respects resembling *spissus* and *kulalensis*. Probably not to be included in the *spissus* species-group as it lacks specialisation of the median lobe of its aedeagus, although its ovipositor is of similar form to that of these species.

Meligethes leucasi sp. n.

Male.—Length, 2·0; breadth, 1·05 mm. Long oval, moderately convex, shining black, with short fine whitish pubescence; antennae and legs reddish. *Head* transverse, feebly convex; clypeus with front margin bordered, sinuate in middle, widely rounded at sides; surface with deep punctures slightly larger than eye facets, separated by half a diameter, spaces between smooth. Antennae entirely reddish; club oval, twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (0·95 : 0·55 mm.), widest at base; its sides almost parallel in basal fourth then gradually more convergent and rounded anteriorly, narrowly bordered, not explanate. Anterior margin feebly convex for width of neck, then curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·95 : 0·6 mm.), weakly convex, sinuate on either side of scutellum, curving forward at each end to the obtusely pointed hind angles. Surface with punctures equal in size to those of head, separated by one to one and a half diameters, spaces between them smooth; punctures absent from a smooth shining zone adjacent to each end of base. *Elytra* scarcely longer than wide (1·1 : 1·05 mm.), widest at basal fourth, sides distinctly bordered, gently curved and convergent

posteriorly to the widely rounded hind angles; apex of each gently rounded; sutural angle obtusely pointed. Shoulders weakly raised, without a humeral stria. Surface with punctures arranged in wavy transverse rows in which they are connected along their basal edge by a fine ridge, thus distinctly transrugose, especially towards base; punctures equal in size to those of pronotum but shallower, separated from their fellows in the same row by one and a half to two diameters, from those in adjacent rows by two and a half diameters; surface between them smooth. *Scutellum* transverse, with widely rounded apex, surface reticulate and with fine rather close punctures. *Pygidium* with surface minutely granular and finely punctate. *Ventral surface* almost black, with head, apex of prosternum, mesosternum, anterior end of metasternum, and posterior margins of abdominal sternites, reddish. Prosternal process one and a quarter times as wide as antennal club, its sides bordered and apex rounded; surface with punctures smaller than eye facets, close anteriorly, finer and more diffuse, finally absent, close to apex; spaces between punctures smooth. Mesosternum impunctate, minutely trans-strigose. Metasternum with punctures equal in size to eye facets, separated by one to one and a half diameters, surface between them very obscurely reticulate; with a somewhat deep, well defined, unpunctured, median longitudinal furrow from basal fourth to apical fifth. Abdomen with first sternite shallowly, more finely and more closely, punctate than metasternum, the succeeding sternites much more finely and closely so, surface between punctures finely aciculate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter, turning back at about its outer fourth. Apex of last sternite with a smooth, shining, deeply transversely concave facet, scarcely broader than long, about two-thirds as wide as antennal club, its sharp anterior edge appearing as a raised ridge concave posteriorly. *Legs* unicolorous reddish. Front tibiae (fig. 9) moderately dilated, one and two-thirds times as wide as antennal club, outer edge scarcely crenulate to below middle then with a group of three sharp downwardly directed teeth, of which the middle is most prominent; subtarsal plate moderately conspicuous. Intermediate and hind tibiae slightly broader, former widest in middle with outer edge evenly rounded, latter widest at apical third, furnished on outer edge from basal fourth and third respectively with fine close downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind convex, especially at basal third; not bordered. Front tarsi three-quarters, intermediate and hind two-thirds, as wide as antennal club; last segment slightly shorter than first four together; claws simple. *Genitalia* short and broad. Tegmen (fig. 54) with short rounded lateral lobes, each with a tooth-like process projecting inwards, apical excision shallow, its straight floor on a more ventral plane; median lobe (fig. 55) with apex shortly truncate.

Female.—Front tibiae slightly narrower, front tarsi three-fifths as wide as antennal club. Metasternum and last abdominal sternite simple. Ovipositor (fig. 104) reddish-yellow with faint apical piceous pigmentation, somewhat pointed; styli three times as long as wide, inserted close to apex and reaching beyond it; outer subdivisions of coxites somewhat short and broad, inner with outer basal angles rounded; "central point" central, without a ventral spicule; transverse suture straight.

Type ♂, KENYA: Nairobi, Kiambu Road, in flowers of *Leucas mollis* Baker (Labiatae), 3.xii.50 (*B. Verdcourt*); in the author's collection.

Paratypes, KENYA: same data, 10 examples; Nairobi, Thika Road House, in flowers of *Leucas mollis*, 10.xii.50 (*B. Verdcourt*), 1 example; Nairobi, in *Leucas mollis*, 3.vi.51 (*B. Verdcourt*), 61 examples; Muguga, 17 miles from Nairobi, on *Leucas*, 3.vi.52 (*B. Verdcourt*), 1 example; all in the author's collection. In addition there are three specimens from KENYA: Nairobi, x.1929 (*G. A. K. Marshall*) in the British Museum (Natural History).

Variations.—The number of teeth near the apex of the front tibiae is infrequently reduced to two or increased to four. Length varies from 1·6 to 2·15 mm.

Biology.—*M. leucasi* is an abundant species taken predominantly on *Leucas mollis* Baker (Labiatae), which without doubt constitutes its host-plant. Found from late May to end of June, and again from October to December.

Comparative notes.—*M. leucasi* and the next seven species together constitute the *gloriosus* species-group, combining the following characters.

Form elongate oval, moderately convex; front tibiae similar to those obtaining in the Palae-

arctic *difficilis* species-group; base of pronotum curving forward slightly at each end and a narrow adjacent band of its upper surface puncture-free and shining; last ventral segment of male abdomen with secondary sexual character at its apex consisting of a well-defined smooth shining surface, wider than long, and transversely concave.

M. leucasi differs from its relatives in the group in that this last character is scarcely wider than long; the metasternum of the male lacks the more usual raised ridges or tubercles; and its upper surface between the punctures is non-reticulate.

Meligethes fulvidus Grouvelle

M. fulvidus Grouvelle, 1908, *Rev. Ent. Caen* **27** : 9.
M. dilutus Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–1906, **1** : 315, **syn. nov.**
M. pallipes Boheman *var.* a, 1851, *Ins. Caffr.* **1** : 574, **syn. nov.**

In the Naturhistoriska Riksmuseum, Stockholm, are two beetles with the data "Caffraria, *J. Wahlb*", and each is labelled "*Meligethes pallipes* Boh., Typus". The first, having transrugose elytra, agrees with Boheman's description, and is now designated as lectotype of that species. The second specimen shows no transrugosity of its elytra and apparently represents Boheman's *var.* a. It agrees well with the unique type (♂) of *M. fulvidus* Grouvelle in the Muséum National d'Histoire Naturelle, Paris, as with the two co-types (♂♂) of *M. dilutus* Grouvelle in the Naturhistoriska Riksmuseum, Stockholm. The three are undoubtedly conspecific. The strong tooth at the base of the tarsal claws is readily distinguishable, although Grouvelle had overlooked it when describing *dilutus*; colour varies from lighter to darker castaneous.

Male : metasternum with a shining unpunctured median longitudinal impression throughout its length, broadest at third fifth from front, and here bounded on each side by a low elongate tubercle; adjacent to apex of last sternite is a well-defined transversely concave smooth area, twice as wide as long, equal in width to prosternal process (one and a half times as wide as antennal club). Aedeagus as figured (figs. 56 and 57). Tegmen with shallow apical excision between short, round, lateral lobes, undulating base of excision on a slightly more ventral plane; median lobe subparallel, with apex rounded. *Female* : ovipositor (fig. 105) unicolorous reddish-yellow, pointed, with short clavate styli at a distance from apex equal to half their length; coxites with outer subdivisions moderately long and broad, inner with outer basal angles widely rounded; "central point" almost central, without a ventral spicule; transverse suture almost straight.

M. fulvidus was originally taken in TANGANYIKA: Amani, and *dilutus* on Kilimandjaro. It appears to be a common species in KENYA, where B. Verdcourt has collected for the author 79 examples in the Nairobi, Naivasha, and Muguga (7,300 ft.) districts. Here it has usually been associated (iv, vi, vii, xii) with *Leonotis nepetifolia* (L.) Ait. f. (Labiatae). Curiously enough the species is also abundant in BASUTOLAND: Mamathes, on *Leonotis dysophilla* Benth., 14.ii.53 (*C. Jacot-Guillarmod*), 10 ♂, 8 ♀, and in NATAL: Nqutu, on *Leonotis leonurus* (L.) Ait. f., 31.v.57 (*A. H. Newton*), 15 ♂, 20 ♀; all in the author's collection. In British Museum (Natural History) are 3 ex. from PONDOLAND: Port St. Johns, v.1924 (*B. E. Turner*).

Meligethes equus sp. n.

Male.—Length, 2·2; breadth, 1·25 mm. Long oval, moderately strongly convex, head and pronotum shining, elytra rather dull, deep blackish-blue, pubescence shorter than punctures, quite inconspicuous, antennae and legs reddish. *Head* transverse, almost flat; clypeus with front margin bordered, widely shallowly sinuate, with side angles rounded; surface with deep punctures as large as eye facets, separated by one diameter, spaces between them closely reticulate. Antennae reddish-yellow; club slightly darker, oval, one and a half times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, one and two-thirds times as wide as long (1·15 : 0·7 mm.), widest at basal third; its sides feebly convergent towards base, more

rounded and convergent anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·1 : 0·7 mm.), weakly convex, feebly sinuate on either side of scutellum, curving forward at each end to the obtusely pointed hind angles. Surface with punctures equal in size to eye facets, separated by one to one and a half diameters, spaces between them shallowly reticulate; punctures absent from a very narrow zone adjacent to each end of base. *Elytra* as long as wide (1·25 mm.), widest at basal third, sides somewhat strongly bordered, moderately rounded and convergent posteriorly to the widely rounded hind angles; apex of each feebly rounded; sutural angle obtusely pointed. Shoulders weakly raised, with a trace of a humeral stria attaining apical third. Surface not rugose, but punctures near base with a tendency to assume transverse rows, equal to eye facets, separated by one and a half to two diameters, spaces between them with deep reticulation comprising minute slightly elongate cells. *Scutellum* finely shallowly closely punctate, with surface reticulate. *Pygidium* closely granulate, and pubescent. *Ventral surface* black, with head, and posterior edges of prosternal process, metasternum and abdominal sternites, narrowly reddish. Prosternal process one and a quarter times as wide as antennal club, its sides bordered and apex rounded; surface with punctures equal in size to eye facets separated by one to two diameters or more, spaces between them smooth. Mesosternum impunctate, minutely closely trans-strigose. Metasternum with punctures equal in size to eye facets separated by one diameter in anterior third, by half a diameter in posterior third, but finer and more diffuse in mid-third, spaces between them obscurely aciculate; from anterior fourth to posterior fifth is a well-defined smooth shining median longitudinal depression, concave from side to side, as wide as antennal club, bounded on each side at middle by a low elongate tubercle. Abdomen with sternites extremely finely, moderately closely punctate, their surface aciculate, but narrowly smooth and shining along hind margin. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. Apex of last sternite with a well-defined smooth shining saddle-like depression, concave from side to side, twice as wide as long, its width one and two-thirds times that of antennal club. *Legs* reddish, with spines on outer edge of intermediate and hind tibiae, and claws, black. Front tibiae (fig. 10) moderately dilated, one and three-quarter times as wide, with teeth, as antennal club; outer edge crenulate to middle, then with a group of five long rather sharp downwardly directed teeth of which the penultimate is most prominent; subtarsal plate moderately conspicuous. Intermediate and hind tibiae slightly broader, widest at middle and apical third respectively, their outer edges more or less evenly rounded and furnished with strong spine-like downwardly directed pegs from basal fourth. Inner edge of front and intermediate tibiae almost straight, of hind convex, especially at basal third; not bordered. Front tarsi almost as wide as antennal club, intermediate two-thirds, hind half as wide; last segment almost as long as first four together; claws with a tooth at base. *Genitalia* moderately short and broad. Tegmen (fig. 58) with short rounded lateral lobes, apical excision rather shallow, its base trilobular and on a more ventral plane; median lobe (fig. 59) bluntly pointed, apical portion explanate and shining.

Female.—Front tarsi half, intermediate one-third, hind one-quarter, as wide as antennal club; all tibiae slightly narrower. Metasternum without median longitudinal furrow, or tubercles; apex of last sternite simple. Ovipositor (fig. 106) reddish-yellow, somewhat long and pointed; with very short styli at a distance from apex equal to their length; outer subdivisions of coxites long and narrow; " central point " almost at apical third; transverse suture straight.

Type ♂, KENYA: Nairobi, on *Leucas mollis* Baker (Labiatae), 3.vi.51 (*B. Verdcourt*); in the author's collection.

Paratypes, KENYA: same data, 4 ♂, 1 ♀; Nairobi, Kiambu Road, in flowers of *L. mollis* Baker, 3.xii.50 (*B. Verdcourt*), 2 ♂, 1 ♀; Nairobi, Thika Road House, in flowers of *L. mollis* Baker, 10.xii.50 (*B. Verdcourt*), 4 ♂, 2 ♀; in the author's collection.

Variations.—Colour is almost black and varies slightly towards chestnut or violet. Length is from 2·0 to 2·3 mm.; and the number of large teeth on the outer edge of the front tibiae may be as few as four or as many as six.

Biology.—Taken from flowers of *Leucas mollis* Baker (Labiatae) in company with *M. leucasi*, and at the same time of year (vi, xii), but in smaller numbers. It is possible that it shares the same host-plant, though it is to be noted that in the above series males outnumber females.

Comparative notes.—Distinguished from all others in its group by the well-developed

tooth on its tarsal claws combined with its blue-black colour. Its general form is somewhat robust, and its elytra notably dull in comparison with head and pronotum.

Meligethes verdcourti sp. n.

Male.—Length, 2·1 ; breadth, 1·2 mm. Elongate oval, moderately convex, somewhat dull, black, with inconspicuous pubescence shorter than punctures ; antennae and legs dark fuscous reddish-brown. *Head* transverse, scarcely convex ; clypeus with front margin strongly bordered, deeply sinuate in middle and rounded at sides ; surface with punctures equal in size to eye facets, separated by one diameter, spaces between them strongly reticulate. Antennae dark fuscous reddish-brown with second segment reddish-yellow ; club broad oval, twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (1·15 : 0·65 mm.), widest at basal fourth ; sides scarcely convergent posteriorly, rounded and more convergent anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·1 : 0·7 mm.), gently convex, and feebly sinuate on either side of scutellum, obliquely truncate at each end towards the obtusely pointed hind angle. Surface with punctures slightly smaller than those of head, separated by one and a half diameters, spaces between them distinctly closely reticulate, punctures absent from a narrow zone adjacent to each end of base. *Elytra* scarcely as long as broad (1·15 : 1·2 mm.), widest at basal fourth, sides narrowly bordered, gently curved and convergent posteriorly to the widely rounded hind angles ; apex of each feebly rounded; sutural angle obtusely pointed. Shoulders weakly raised with a shallow humeral stria external to each. Surface with punctures showing a tendency close to base to arrangement in transverse rows, punctures equal in size to those of pronotum, each elongate, and deeper and more defined at its anterior end, separated from its fellows in the same row by one diameter, in adjacent rows by one and a half diameters ; spaces between them with distinct reticulation comprising multiple minute polygonal cells. *Scutellum* with apex rounded, surface minutely reticulate and finely punctate. *Pygidium* with surface closely granular. *Ventral surface* black with hind edge of basal abdominal segments reddish and shining. Prosternal process broad, one and a quarter times as wide as antennal club, sides finely bordered, apex truncate ; surface with rugose punctures as large as eye facets, separated by half to one diameter, but finer and more diffuse at apex. Mesosternum impunctate, minutely trans-strigose. Metasternum with shallow punctures slightly smaller than eye facets, separated by one and a half to two diameters, spaces between them shallowly aciculate ; with a pair of distinct elongate granular paramedian tubercles at the third fifth, separated by a distance as wide as antennal club, the surface between them smooth and transversely concave. Abdomen with first sternite having shallow punctures slightly smaller and closer than those of metasternum, the succeeding segments more finely and closely punctate, surface of all aciculate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter, turning back at its outer fourth. Apex of last sternite with a well-defined, smooth, transversely concave, oval facet, one and a quarter times as wide as antennal club and twice as wide as long. *Legs* dark reddish-brown with outer edges of tibiae and apical tarsal segments fuscous. Front tibiae (fig. 11) moderately broadened, one and a half times as wide as antennal club, outer edge finely crenulate to just above middle, then with a group of six sharp narrow downwardly directed teeth gradually enlarging to the penultimate ; subtarsal plate moderately conspicuous. Intermediate and hind tibiae broader than front, former widest at middle with outer edge evenly rounded, latter with outer edge most rounded at apical third, both furnished externally from basal third and fourth respectively with close downwardly directed pegs. Inner edge of front tibiae straight, of intermediate weakly convex, of hind convex at basal third ; not bordered. Front tarsi two-thirds, intermediate half, hind one-third, as wide as antennal club ; last segment slightly shorter than first four together ; claws simple. *Genitalia* moderately broad and short. Tegmen with very short rounded lateral lobes, its wide shallow apical excision with base not quite straight, as figured (fig. 60), shoulders not well marked ; median lobe (fig. 61) shortly explanate and shining before its somewhat acuminate apex.

Female.—Front tarsi half, intermediate and hind one-third, as wide as antennal club, and all tibiae narrower. Metasternum and last abdominal sternite simple. Ovipositor (fig. 107) pitchy-brown, coxites, especially their apical part, darker ; somewhat pointed ; styli three times as long as wide inserted at a distance from apex slightly less than their length ; coxites with outer subdivisions moderately long, their inner subdivisions with basal angles rounded ; " central point " centrally placed, without a ventral spicule ; transverse suture almost straight.

Type ♂, KENYA: Muguga, on *Leucas oligocephala* Hk. f. (Labiatae), 15.ix.53 (*B. Verdcourt*); in the author's collection. Dedicated to the finder who has collected so energetically on behalf of the author.

Paratypes, KENYA: same data, 32 ♂, 25 ♀; Muguga, north, on *L. oligocephala*, 16.x.53, 11 ex.; Nairobi area, on *Leucas* sp., 1953, 1 ♂; Thika Road grasslands, 5 miles north of Nairobi, on *Leucas* sp., 30.vi.54, 2 ♀ (all *B. Verdcourt*), in the author's collection.

Variations.—Length ranges from 1·7 to 2·3 mm., and the number of teeth on the outer edge of the front tibiae varies slightly as in related species. In many examples the pronotum is broadest at the extreme base.

Biology.—The species is abundant on *Leucas oligocephala* Hk. f., which no doubt constitutes its host-plant. Found vi, ix, and x, many of those taken in September being immature.

Comparative notes.—Distinctly dull as compared with the remaining species in the *gloriosus* group, and less elongate.

Meligethes gloriosus Grouvelle

M. gloriosus Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–06, 1 : 318.

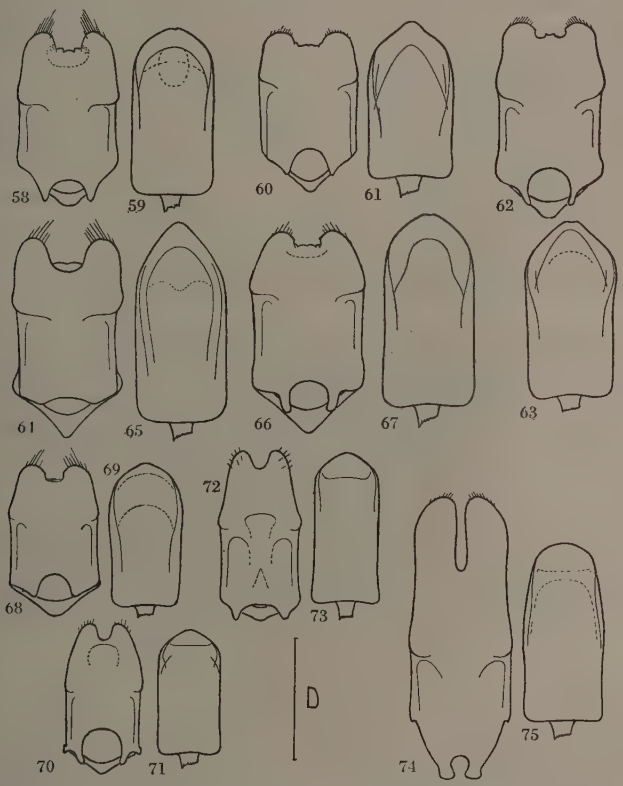
Of the eight original syntypes taken on Kilimandjaro, Kiboscho, 3,000 m. (*Sjöstedt*), the author has examined one male dated 17.ii in the Muséum National d'Histoire Naturelle, Paris, and four females in the Naturhistoriska Riksmuseum, Stockholm, one dated 17.ii, one 18.ii, and one with the additional label: "Regenwald". They agree with Grouvelle's description, and all bear red "type" labels.

Readily recognisable by its brightly shining metallic green colour with yellowish antennae and legs, and somewhat elongate form. Upper surface between punctures with distinct shallow reticulation formed of minute polygonal cells. Outer edge of front tibiae with about seven larger teeth as figured (fig. 12). In both sexes hind edge of mesosternum distinctly rounded. *Male:* front tarsi four-fifths as wide as antennal club; metasternum with a deep shining unpunctured median longitudinal groove, deepest anteriorly and especially just in front of centre, flattening out posteriorly; apex of last sternite with well-defined, smooth, shining, transversely concave depression almost equal in width to hind tibia. Aedeagus as figured (figs. 62 and 63); tegmen with apical excision wide and shallow, bounded on the inner aspect of each lateral lobe by an angular projection, its floor with a minute tooth-like spur on each side of the mid-line; median lobe with apex somewhat acuminate. *Female:* front tarsus two-thirds as wide as antennal club; metasternum and last ventral segment of abdomen simple. Ovipositor (fig. 108) entirely reddish-yellow, bluntly pointed; styli three times as long as wide, inserted very close to apex and projecting beyond it; coxites with outer subdivisions moderately long and narrow, inner subdivisions with basal angles pointed; "central point" slightly nearer apex, with a very short ventral spicule; transverse suture almost straight.

Meligethes montivagus sp. n.

Male.—Length, 2·2; breadth, 1·05 mm. Elongate oval, moderately convex, somewhat shining, dark bluish-green, with extremely short inconspicuous yellowish pubescence; legs pitchy reddish-yellow. *Head* transverse, feebly convex; clypeus with front margin somewhat widely shallowly sinuate in middle, side angles rounded; surface strongly and closely punctate, punctures one and a half times as large as eye facets separated by one diameter, spaces between them microscopically reticulate. Antennae with first segment reddish, second to fourth yellowish, then gradually darkening to the pitchy brown club; club twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·0 : 0·55 mm.), widest immediately in front of base; sides almost parallel for basal third, then gradually rounded and convergent towards front angles. Anterior margin straight for width of neck, curving forward slightly at each end to the blunt obtuse front angles. Hind margin longer than front (1·0 : 0·6 mm.), very feebly convex and very feebly sinuate on either side of scutellum, hind angles

obtuse, blunt. Sides narrowly bordered. Surface with punctures equal in size to those of head, separated by two diameters, spaces between them microscopically reticulate. *Elytra* nearly one and a half times as long as wide (1·4 : 1·05 mm.), at base as wide as pronotum, slightly rounded at sides and widest at basal third ; apical and sutural angles rounded, latter with a very small tooth, apices slightly oblique, feebly rounded. Surface with slightly rugose shallow punctures, equal in size to those of pronotum, separated by two to two and a half diameters, spaces between them with strong reticulation consisting of minute polygonal cells. *Scutellum* black, small, with



Figs. 58–75.—Aedeagi. (58) *Meligethes equus* sp. n., tegmen, dorsal view ; (59) the same, median lobe. (60) *M. verdcourti* sp. n., tegmen ; (61) the same, median lobe. (62) *M. gloriosus* Grouvelle, tegmen ; (63) the same, median lobe. (64) *M. montivagus* sp. n., tegmen ; (65) the same, median lobe. (66) *M. sellaris* sp. n., tegmen ; (67) the same, median lobe. (68) *M. lornae* sp. n., tegmen ; (69) the same, median lobe. (70) *M. paraproctatus* sp. n., tegmen ; (71) the same, median lobe. (72) *M. cornutus*, sp. n., tegmen ; (73) the same, median lobe. (74) *M. pilosus* sp. n., tegmen ; (75) the same, median lobe. Scale D = 0·25 mm.

apex bluntly pointed, its surface with very fine diffuse punctures, between them reticulate. *Pygidium* granular, diffusely punctate, with somewhat conspicuous pale pubescence. *Ventral surface* black with faint greenish metallic reflection. Prosternal process broadest before apex, here almost as wide as antennal club, apex rounded, terminal third strongly depressed ; its shallow punctures smaller than eye facets, and almost absent from apical third, surface between them smooth. Mesosternum unpunctured, very finely cross-reticulate. Metasternum with extremely minute diffuse punctures, surface between them reticulate ; secondary sexual characters consist of a pair of prominent longitudinal tubercles close together on either side of mid-point, from the anterior margin a median longitudinal sulcus passes back between them and then broadens out triangularly. Abdominal sternites with surface sculpture like that of metasternum, but punctures rather closer.

Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. The last ventral segment bears at its apex a smooth transverse oval area, concave from side to side, two and a half times as wide as long, its ends slightly raised above the surrounding surface to appear as small tubercles. *Legs* moderately strongly broadened; anterior tibiae (fig. 13) one and a half times as wide as antennal club, with outer edge finely crenulate to second fifth, then with five long narrow sharp downwardly directed teeth, gradually increasing in size to the penultimate, last only slightly shorter; subtarsal plate somewhat broad. Intermediate tibiae almost parallel-sided in mid-third, with outer edge rounded and furnished from basal fourth with a series of close short sharp conical pegs. Hind tibiae widened to basal third, outer edge rounded, then abruptly narrowed from apical fourth, with fine close pegs from basal third. Inner edge of front and intermediate tibiae almost straight, of hind feebly convex. Front tarsi almost as wide as antennal club, intermediate and hind narrower; all with last segment distinctly shorter than first four together; claws simple. *Genitalia* as figured (figs. 64 and 65). Tegmen with short rounded lateral lobes separated by a shallow U-shaped apical excision, whose apparent depth is reduced by a shelf crossing it on a more ventral plane; median lobe with apex explanate and pointed.

Female.—All tarsi narrower, front two-thirds as wide as antennal club. Last sternite simple, but metasternum with two obsolete tubercles representing the more highly developed feature of the male. Ovipositor as figured (fig. 109). Reddish-yellow, with apex slightly piceous; the very short styli at a distance from the pointed apex equal to their length; "central point" at apical two-fifths with a very long narrow ventral spicule; transverse suture straight.

Type ♂, TANGANYIKA: Meru, 3,500 m., Jan. (*Sjöstedt*) in the collection of the Muséum National d'Histoire Naturelle, Paris.

Paratypes, all with same data as type. One ♂ in same collection; 8 ex., including 5 ♀, in the Naturhistoriska Riksmuseum, Stockholm. These eight originally constituted the type series of "*M. splendens* Grouvelle" (vide *antea* p. 273).

Variations.—Length 2·0–2·5 mm.; the metallic reflection of the upper surface is in some examples more blue, in others more green.

Comparative notes.—*M. montivagus* is at once distinguished from *M. gloriosus* Grouvelle by the larger size and brilliant coloration of the latter; the aedeagus and ovipositor are also distinct. It much more resembles *M. sellaris* sp. n. but is slightly brighter, and here again the genitalia differ in both sexes.

Meligethes sellaris sp. n.

Male.—Length, 2·4; breadth, 1·35 mm. Long oval, rather strongly convex, moderately shining, dark greenish-black, slightly metallic, with very short inconspicuous pubescence; antennae and legs pitchy reddish. *Head* transverse, slightly convex, clypeus with front margin distinctly bordered, moderately deeply sinuate in middle, widely rounded at sides; surface with deep punctures slightly larger than eye facets, separated by half to one diameter, spaces between them reticulate. Antennae with segments one and two reddish, succeeding segments and club pitchy reddish; club oval, twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, twice as wide as long (1·2 : 0·65 mm.), widest at base; sides subparallel in basal third, rounded and convergent anteriorly, distinctly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·2 : 0·8 mm.), gently convex, and distinctly sinuate on either side of scutellum, curving forward at each end to the obtusely pointed hind angles. Surface with punctures equal in size to those of head, separated by one and a half diameters, spaces between distinctly reticulate with a fine mesh, punctures absent from a narrow zone along each end of base. *Elytra* as long as broad (1·35 mm.), widest at basal third, sides distinctly bordered, gently rounded, and convergent towards the widely rounded hind angles; apex of each gently curved; sutural angle obtusely pointed. Shoulders not very prominent, without a humeral stria. Surface with somewhat rugose punctures, slightly larger than those of pronotum, each shallower and tending to taper posteriorly, separated by one and a half diameters; spaces between them with distinct reticulation composed of small polygonal cells. *Scutellum* with apex rounded, surface very finely punctate, and minutely reticulate. *Pygidium* with surface closely granular and pubescent. *Ventral surface* anteriorly pitchy reddish, posteriorly darker castaneous with a trace of greenish metallic

reflection. Prosternal process one and a quarter times as wide as antennal club, with apex rounded, sides finely bordered ; surface with rugose punctures equal in size to eye facets separated by one diameter. Mesosternum impunctate, minutely trans-strigose, with hind edge rounded. Metasternum with shallow punctures half as large as eye facets, separated by two diameters, spaces between them irregularly aciculate ; with a shallow median longitudinal unpunctured furrow from anterior fourth, as wide as first antennal segment. Abdominal sternites with surface minutely and closely punctate, and aciculate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. Apex of last sternite with a well-defined smooth transversely concave facet, two and a half times as wide as long, as wide as front tibia, its ends raised into low pointed tubercles. *Legs* reddish-brown with outer edge of tibiae and apical segment of tarsi pitchy to black. Front tibiae (fig. 14) moderately broadened, one and two-thirds times as wide as antennal club, outer edge finely crenulate to middle, then with a group of five long sharp downwardly directed teeth gradually increasing in size to the penultimate ; subtarsal plate moderately broad. Intermediate and hind tibiae similarly broadened, widest at apical third and fourth respectively, their outer edges furnished from basal fourth and third with downwardly directed pegs, closer and finer on the hind tibiae. Inner edge of front and intermediate tibiae almost straight, of hind gently convex ; not bordered. Front tarsi three-quarters, intermediate and hind two-thirds, as wide as antennal club ; last segment slightly shorter than first four together ; claws simple. *Genitalia* as figured (figs. 66 and 67). Tegmen somewhat strongly narrowed from shoulders, its short rounded lateral lobes with an angulation on their inner aspect, apical excision shallow, its base not quite straight and on a more ventral plane ; median lobe bluntly pointed.

Female.—Front tarsi little more than half, intermediate and hind one-third, as wide as antennal club, and tibiae on an average narrower. Metasternum and last ventral segment of abdomen simple. Ovipositor (fig. 110) reddish-yellow, with apex piceous ; somewhat pointed, styli quite three times as long as wide inserted very close to apex ; coxites with outer subdivisions rather broad, inner subdivisions with basal angles pointed ; " central point " slightly approximated to apex, with a very short ventral spicule ; transverse suture almost straight.

Type ♂, KENYA : Nairobi district, on *Leucas* sp. (Labiatae), 1953 (*B. Verdcourt*) ; in the author's collection.

Paratypes, KENYA : same data, 2 ♂, 2 ♀ ; Muguga, 16 miles west of Nairobi, on *Pentas lanceolata* (Forsk.) Deflers (Rubiaceae), 28.v.52 (*B. Verdcourt*), 3 ♂ ; Muguga, on *Leucas* sp., 3.vi.52 (*B. Verdcourt*), 25 ex.; Muguga, on *Pentas lanceolata*, 5.vi.52 (*B. Verdcourt*), 8 ♂, 5 ♀ ; all in the author's collection.

Variation.—Length 2·0–2·4 mm. Colour is variable, being often a faintly brassy black without any trace of green or blue. The longer teeth on the front tibiae are seldom reduced to four or increased to six.

Biology.—In the series taken on *Pentas lanceolata* males have outnumbered females, whereas the reverse has been more usual with those taken on *Leucas* sp. The latter is more likely therefore to represent the true host-plant.

Comparative notes.—Very similar to *M. montivagus* sp. n., but less brightly coloured, with the upper surface more strongly and closely punctate, and with broader tibiae. In the male the tegmen of its aedeagus is more narrowed towards the apex, and the median lobe less pointed. In the females the ovipositors are amply distinct, more elongate than *M. lornae* sp. n., and further distinguished by the characters noted in the key.

Meligethes lornae sp. n.

Male.—Length, 1·9 ; breadth, 1·05 mm. Elongate oval, moderately convex, shining black, with extremely short inconspicuous pubescence ; antennae and legs dark pitchy brown. *Head* transverse, moderately convex ; clypeus with front margin strongly bordered, widely somewhat deeply sinuate in the middle, with side angles rounded ; surface with deep punctures equal in size to eye facets, separated by one diameter, spaces between them distinctly reticulate. Antennae pitchy-brown, except segment two yellowish ; club oval, twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, twice as wide as long (1·0 : 0·55 mm.), widest at basal fifth ; sides almost parallel in basal half, rounded and convergent anteriorly,

narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·0 : 0·65 mm.), feebly convex, shallowly sinuate on either side of scutellum, and obliquely subtruncate at each end towards the obtusely pointed hind angles. Surface with punctures sightly smaller than those of head, separated by one and a half diameters, spaces between them distinctly reticulate, punctures absent from a narrow zone along each end of base. *Elytra* as long as broad (1·05 mm.), widest at basal fourth, sides narrowly bordered, gently curved, and convergent towards the widely rounded hind angles ; apex of each weakly convex ; sutural angle obtusely pointed. Shoulders moderately raised, without a humeral stria. Surface with slightly rugose punctures, a little larger than those of pronotum, each shallower and more pointed posteriorly, separated by two diameters ; spaces between them with shallow close reticulation tending to radiate from the punctures. *Scutellum* with apex scarcely pointed, surface closely reticulate and with minute punctures. *Pygidium* with surface closely granular. *Ventral surface* almost black, hind edges of metasternum and abdominal segments narrowly yellowish. Prosternal process one and a quarter times as wide as antennal club, with apex rounded, sides narrowly bordered ; surface with deep punctures smaller than eye facets becoming very sparse towards apex. Mesosternum impunctate, minutely cross-reticulate, with hind edge rounded. Metasternum with shallow punctures half as large as eye facets, separated by two and a half diameters but closer anteriorly, spaces between them finely reticulate ; with a smooth shining median longitudinal furrow, almost as wide as antennal club, from anterior third, broadening out in posterior fifth, its edges in the middle fifth prominent and appearing granulate. Abdomen with first sternite very finely and diffusely punctate, segments two to five more closely, all finely reticulate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. At apex of last sternite is a well-defined smooth shining depression, transversely concave, as wide as prosternal process, and half as long. *Legs* pitchy-brown. Front tibiae (fig. 15) not strongly broadened, one and a half times as wide as antennal club, outer edge finely crenulate to middle, then with a group of four sharp downwardly directed teeth, gradually lengthening to the penultimate ; subtarsal plate moderately conspicuous. Intermediate and hind tibiae broader than anterior, widest about middle, their outer edges from basal fourth and third, respectively, with downwardly directed pegs, closer and finer on hind tibia. Inner edge of front and intermediate tibiae almost straight, of hind weakly convex at basal third ; extremely narrowly bordered. Front tarsi two-thirds, intermediate and hind half, as wide as antennal club ; last segment slightly shorter than first four together ; claws simple. *Genitalia* as figured (figs. 68 and 69). Tegmen slightly narrowed to apex, its short rounded lateral lobes feebly angled on each side of the apical excision, the trilobulate floor of which is on a more ventral plane ; median lobe feebly acuminate, somewhat smooth and explanate immediately before its apex.

Female.—Front tarsi half, intermediate and hind one-third, as wide as antennal club. Metasternum and last ventral segment of abdomen simple. Ovipositor (fig. 111) reddish-yellow, with apex slightly piceous ; styli about twice as long as wide inserted very close to apex ; coxites with outer subdivisions rather long and narrow ; " central point " slightly nearer to apex, without a ventral spicule ; transverse suture straight.

Type ♂, KENYA : Thika Road grasslands, 5 miles north of Nairobi, on *Leucas* sp. (Labiatae), 30.vi.54 (*B. Verdcourt*) ; in the author's collection.

Paratypes, KENYA : same data, 2 ♂, 12 ♀ ; Muguga, near Nairobi, on *Leucas oligocephala* Hk. f., 15.ix.53 (*B. Verdcourt*), 4 ♂, 3 ♀ ; in the author's collection.

Variations.—Length 1·6–2·2 mm. Colour is generally black, but some specimens exhibit a faint though distinct blueness of the elytra, and then simulate the preceding species.

Biology.—Almost certainly passing its larval stage on a species of *Leucas*, perhaps *L. oligocephala*.

Comparative notes.—Smaller, slightly broader, and less elongate than *sellaris*, with the elytral punctures finer ; the antennae and legs are much darker and the teeth on the front tibiae longer and narrower.

Meligethes paraproctatus sp. n.

Female.—Length, 1·9 ; breadth, 0·95 mm. Elongate, subparallel, moderately strongly convex, somewhat shining black, with close short yellowish pubescence ; intermediate and hind legs

black, fore legs very slightly reddish. *Head* transverse triangular, almost flat ; clypeus with front margin widely deeply emarginate, and side angles sharp ; surface with punctures equal in size to eye facets, separated by half to one diameter, spaces between them finely reticulate. Antennae black, second segment very slightly paler reddish ; club one and a half times as long and nearly twice as wide as first antennal segment. *Pronotum* transverse, a little less than twice as wide as long (0·9 : 0·55 mm.), widest at basal fifth ; sides gradually rounded, convergent anteriorly, feebly so towards base. Anterior margin very nearly straight, the bluntly obtuse front angles scarcely projecting forwards. Hind margin longer than front (0·85 : 0·6 mm.), very feebly convex and weakly sinuate on either side of scutellum, hind angles bluntly obtuse. Sides very narrowly bordered. Surface with punctures of equal size to those of head, separated by one to one and a half diameters, spaces between them finely, shallowly, reticulate. *Elytra* scarcely longer than wide (1·05 : 0·95 mm.), at base as wide as pronotum, feebly rounded at sides and widest at middle ; apical angles rounded, apices separately gradually rounded, sutural angles obtuse, pointed. Surface with punctures almost equal in size to those of pronotum, shallower, with their hind edges less well defined, and showing a faint trace of transrugosity, separated by about two diameters ; spaces between them finely reticulate *Scutellum* small, triangular, with rounded apex, its surface somewhat strongly reticulate, and with a few shallow punctures. *Pygidium* with surface finely and closely granular, with pubescence similar to that of the general surface but markedly longer at the extreme apex. *Ventral surface* black. Prosternal process slightly broadened before apex, here one and a third times as wide as antennal club, apex gently rounded ; with deep punctures as large as eye facets, separated by a quarter to one diameter, surface between them smooth. Mesosternum unpunctured, reticulate. Metasternum with rather deep punctures slightly larger than eye facets and separated by about one diameter, surface between them smooth. Abdomen with first sternite having punctures smaller than those of metasternum, and more diffuse, succeeding segments much more finely and closely punctate, surface of all between punctures reticulate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back only very shortly before reaching its outer end. *Legs* somewhat narrow, anterior tibiae at most one and a third times as wide as antennal club. Front tibiae (fig. 16) gradually widened to apical sixth, outer edge almost straight with fine sharp crenulations to apical third, where they gradually develop into four or five bluntly pointed teeth, the penultimate being the most prominent; subtarsal plate narrow. Intermediate tibiae widest just below middle ; with outer edge rounded and furnished with short, close, peg-like spines gradually increasing in length towards apex. Hind tibiae widest at apical fourth, outer edge near base with close fine setae gradually thickening into pegs towards apex. Inner edge of intermediate and hind tibiae weakly convex, of front straight. All tarsi black ; front almost as wide as antennal club, intermediate and hind two-thirds as wide ; last segment of all tarsi as long as first four together ; claws simple. *Genitalia* as figured (fig. 112). Ovipositor reddish-yellow, with a well-marked corona ; obtusely pointed, with short styli at a distance from apex a little in excess of their length ; outer subdivisions of coxites long and very narrow ; paraprocts expanded into thin flat plates, abruptly constricted before their basal (anterior) extremity ; sclerotised inner edge of valvifers exceptionally broad.

Male.—Front tibiae and tarsi somewhat strongly dilated, former at their widest one and a half times, latter one and a quarter times, as wide as antennal club. Ventral surface without secondary sexual characters. *Genitalia* as figured (figs. 70 and 71). Tegmen gradually narrowed from middle, with small U-shaped apical excision bounded by short rounded lateral lobes ; median lobe parallel-sided with apex bluntly pointed.

Type ♀, KENYA : Muguga, on *Aspilia* sp. (Compositae), vi.54 (*B. Verdcourt*) ; in the author's collection. A female was deliberately chosen as type as the species was named from a female character, and because, although the male paratypes agree in characters other than those of sexual significance, absolute proof of their common identity is still awaited.

Paratypes, KENYA : same data, 4 ♀ ; Nairobi area, on *Leucas* sp. (Labiatae), 1953 (*B. Verdcourt*), 2 ♂ ; all in the author's collection. Other material examined comprises : KENYA : Muguga, 6,800 ft., on *Helichrysum* sp. (Compositae), 5.i.55, 2 ♀ ; Muguga, on *Helichrysum*, 24.i.55, 4 ♀ ; and Muguga, on *Chrysanthemum* sp. (Compositae), 30.i.55, 1 ♀ (all *B. Verdcourt*) ; in the author's collection.

Variations.—The smallest specimen in the present series measures 1·6, the largest 2·05 mm. in length.

Comparative notes.—*M. paraproctatus* is undoubtedly somewhat closely related to *M. cornutus* and others of the *forcipatus* species-group. It is to be distinguished by the characters noted in the key, and has the front of its clypeus more deeply emarginate.

Meligethes lividus Easton

M. lividus Easton, 1959, *Trans. R. ent. Soc. Lond.* **111** : 384.

Five examples from KENYA, on *Pyrethrum* flowers (Compositae), vi.1954 (*R. H. LePelley*), in the collection of the Commonwealth Institute of Entomology. Previously known only from Abyssinia.

Readily distinguished from others in the *forcipatus* species-group by its much smaller size. Its ovipositor (Easton, 1959 : 400, fig. 65) is very like that of *cornutus*, but has the outer subdivisions of the coxites somewhat broader and shorter.

Meligethes astylus sp. n.

Female.—Length, 2·0 ; breadth, 1·05 mm. Elongate, subparallel, moderately convex, somewhat shining black, with fine close conspicuous pubescence ; antennae and legs nearly black, front tibiae reddish. *Head* transverse, scarcely convex ; clypeus with front margin distinctly bordered, widely emarginate with side angles sharp ; surface with deep punctures as large as eye facets, separated by half a diameter, spaces between them almost smooth. Antennae brown-black, with second segment paler, club oval, one and two-thirds times as long and twice as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (0·9 : 0·55 mm.), widest at basal third ; sides gently rounded and more convergent anteriorly, distinctly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·85 : 0·55 mm.), feebly convex, and feebly sinuate on either side of scutellum ; hind angles obtusely pointed. Surface with punctures slightly smaller than those of head, separated by one diameter, spaces between them finely microscopically reticulate. *Elytra* as long as broad (1·05 mm.), widest at middle, sides narrowly bordered, gently evenly curved and convergent towards the widely rounded hind angles ; apex of each weakly convex ; sutural angle obtusely pointed. Shoulders weakly raised, without a humeral stria. Surface with punctures equal in size to eye facets separated by one to one and a half diameters; spaces between them distinctly reticulate. *Scutellum* with apex rounded, its surface minutely punctate and reticulate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process one and a third times as wide as antennal club, with apex rounded, sides narrowly bordered; surface with deep punctures equal in size to eye facets separated by half a diameter. Mesosternum impunctate, minutely reticulate. Metasternum with deep punctures slightly larger than eye facets, separated by half a diameter, the very narrow spaces between them with a trace of reticulation. Abdomen with first segment more finely and more closely punctate, the succeeding segments much more so, surface of all irregularly reticulate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back immediately before reaching its outer end. *Legs* almost black, front tibiae, except outer edges, and tarsi reddish. Front tibiae (fig. 17) moderately broadened, nearly twice as wide as antennal club, outer edge crenulate as far as middle, then with gradually enlarging teeth, the rounded apices of which give the edge of the tibia an evenly rounded contour ; subtarsal plate narrow. Intermediate and hind tibiae slightly narrower, widest at apical third and fourth respectively, their outer edges furnished with very fine close short downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind evenly slightly convex ; not bordered. Front tarsi one and a half, intermediate three-quarters, hind half, as wide as antennal club ; last segment slightly shorter than first four together ; claws simple. *Genitalia* as figured (fig. 113). Ovipositor entirely reddish-yellow, obtusely pointed with extreme apex acuminate ; without styli, these being replaced by an additional sensory hair ; outer subdivisions of coxites somewhat long and narrow ; " central point " almost central, without a ventral spicule ; transverse suture straight.

Male.—Unknown.

Type ♀, KENYA : Muguga, on *Helichrysum* (Compositae), 24.i.55 (*B. Verdcourt*) ; in the author's collection.

Paratypes, KENYA : same data, 3 ♀ ; in the author's collection.

Variations.—The reticulation of the upper surface between the punctures varies slightly in its distinctness.

Biology.—*Helichrysum* would not be the larval host-plant, merely contributing towards the food supply of the adults.

Comparative notes.—Clearly from general appearance and the form of its front tibiae closely related to the preceding and the two following species, and undoubtedly, like them, a member of the *forcipatus* species-group. There is no obvious external character by which to distinguish it from *cornutus* ; moreover, except for the entire absence of styli in *astylus*, their ovipositors are very similar. Examination of further material with recognition of the male is highly desirable.

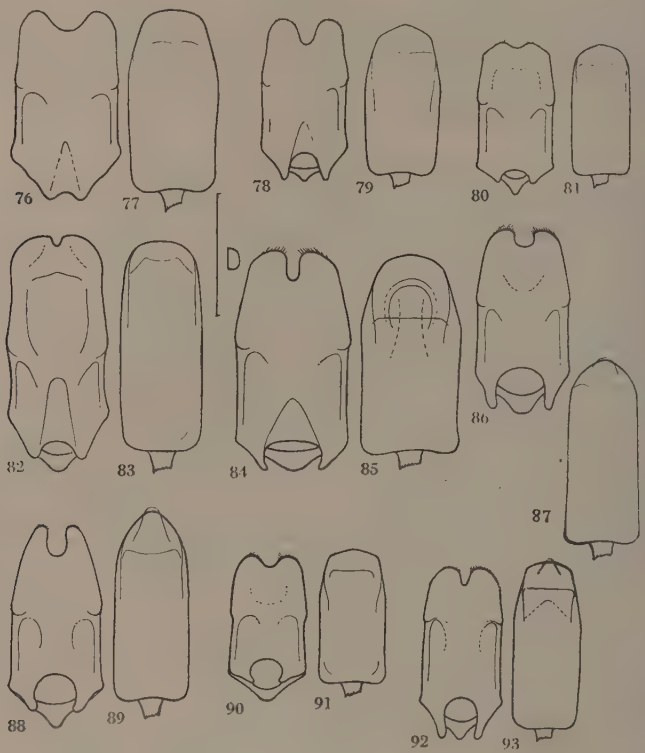
Absence of styli has been noted elsewhere as an important character in taxonomy in the case of *M. obscurus* Erichson, and its relatives *M. lindbergi* Rebmann, *M. hoffmanni* Reitter and *M. japonicus* Reitter, as well as with the members of the *subrugosus* species-group (*M. subrugosus* (Gyllenhal), *M. corvinus* Erichson, *M. turbidescens* Easton and *M. placidus* Easton) (Easton, 1952, 1955*b*, and 1957).

Melegethes cornutus sp. n.

Male.—Length, 1·9 ; breadth, 1·0 mm. Elongate, subparallel, moderately strongly convex, somewhat dull black, with close short yellowish pubescence ; intermediate and hind legs almost black, fore legs pitchy-brown. *Head* transverse, triangular, almost flat ; clypeus with front margin widely, moderately deeply emarginate, with side angles sharp ; surface finely and closely punctate, punctures equal in size to eye facets and separated by half a diameter ; surface between them finely reticulate. Antennae with first and third segments dark reddish-brown, second paler, remaining segments and club dark blackish-brown ; club nearly twice as long, and twice as wide, as first antennal segment. *Pronotum* transverse, slightly less than twice as wide as long (0·95 : 0·55 mm.), widest at basal third ; sides gradually rounded, a little more convergent anteriorly. Anterior margin shallowly evenly concave, front angles bluntly obtuse and scarcely projecting. Hind margin longer than front (0·9 : 0·6 mm.), very feebly convex, and very feebly sinuate on either side of scutellum, hind angles bluntly obtuse. Sides very narrowly bordered. Surface with punctures of equal size to those of head, separated by half to one diameter, spaces between them finely microscopically reticulate. *Elytra* scarcely longer than wide (1·05 : 1·0 mm.), at base as wide as base of pronotum, feebly rounded at sides and widest at middle ; apical angles rounded, apices very nearly jointly truncate, sutural angle very nearly rectangular, sharp. Surface with shallow punctures equal in size to those of head and pronotum, separated by one to one and a half diameters ; surface between them distinctly reticulate. *Scutellum* small, triangular, with rounded apex, its surface with a few very fine shallow punctures and between them somewhat strongly reticulate *Pygidium* with surface finely and closely granular, with pubescence similar to that of general surface, except markedly longer at extreme apex. *Ventral surface* black. Prosternal process slightly broadened before apex, and here one and a half times as wide as antennal club, apex rounded in a low curve ; its punctures as large as eye facets, separated by one and a half diameters, surface between them smooth. Mesosternum unpunctured, reticulate. Metasternum with punctures slightly larger than eye facets, separated by half to one diameter, surface between them smooth. The secondary sexual character consists of a triangular flattening in the posterior two-thirds, the median longitudinal line of which is unpunctured. Abdomen with first sternite having punctures as large as those of metasternum but shallower and more diffuse, succeeding segments much more finely punctate, surface of all between punctures reticulate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back only very shortly before reaching its outer end. Apex of last sternite with a shallow abrupt excision, twice as wide as antennal club, bounded at each extremity by a prominent tubercle the apex of which is directed inwards, but partly obscured by long pubescence. *Legs* not strongly broadened, anterior tibiae at their widest about one and a third times as wide as antennal club, their outer edge (fig. 18) almost straight, with fine sharp crenulations to apical third, then with four short blunt teeth of which the penultimate is largest and most prominent, followed by the subtarsal plate. Intermediate tibiae widest a little below middle, rounded outer edge furnished with short close peg-like spines gradually increasing in length towards apex. Hind tibiae widest at apical fourth, outer edge close to base with close fine setae gradually thickening into pegs towards apex. Inner edge of intermediate and hind tibiae feebly convex, of front tibiae almost straight. Front tarsi

reddish-brown, one and a half times as wide as antennal club ; intermediate and hind almost black, narrower than antennal club ; last segment of front and intermediate tarsi shorter than first four together, of hind equal in length to them ; claws simple. *Genitalia* as figured (figs. 72 and 73). Tegmen somewhat strongly narrowed from just beyond middle, with U-shaped apical excision bounded by short rounded lateral lobes ; median lobe parallel-sided with simply rounded apex.

Female.—Tarsi as strongly dilated as in male. Secondary sexual characters on metasternum and last sternite lacking. Ovipositor (fig. 114) rather similar to that of *lividus*. Unicolorous reddish-yellow, obtusely pointed with short styli at a distance from apex very little in excess of their length ; " central point " displaced slightly towards apex ; paraprocts narrow.



Figs. 76–93.—Aedeagi : (76) *M. hargreavesi* sp. n., tegmen, dorsal view ; (77) the same, median lobe. (78) *M. hintoni* sp. n., tegmen ; (79) the same, median lobe. (80) *M. elgonensis* sp. n., tegmen ; (81) the same, median lobe. (82) *M. voeltzkowi* Grouvelle, tegmen ; (83) the same, median lobe. (84) *M. rileyi* sp. n., tegmen ; (85) the same, median lobe. (86) *M. amplimanus* sp. n., tegmen ; (87) the same, median lobe. (88) *M. lepelleyi* sp. n., tegmen ; (89) the same, median lobe. (90) *M. johnstoni* sp. n., tegmen ; (91) the same, median lobe. (92) *M. patiens* sp. n., tegmen ; (93) the same, median lobe. Scale D = 0·25 mm.

Type ♂, Kenya : Muguga, on *Aspilia* sp. (Compositae), vi.54 (*B. Verdcourt*) ; in the author's collection.

Paratypes, Kenya : same data, 4 ♂, 2 ♀ ; Nairobi, on *Leucas mollis* Baker (Labiatae) 3.vi.51 (*B. Verdcourt*), 1 ♂, 1 ♀ ; in the author's collection. Mt. Kenya, Katheta River, 9,900 ft., 9.viii.49 (*J. A. Riley*, O.U.E.C. Exp.), 5 ♂ ; and one damaged example from same locality, 8.viii.49 ; in British Museum (Natural History). Uganda : Mt. Elgon, 2,200 m., vii.25 (*Alinder*), 1 ♂ ; in the Zoologische Sammlung des Bayerischen Staates, München.

Additional specimens seen are from UGANDA : Nandi Reserve, iii.26 (*Alinder*), 1 ♂, 1 ♀, in Zoologische Sammlung des Bayerischen Staates, München ; and from KENYA : Muguga, 6,800 ft., on *Helichrysum* (Compositae), 5.i.55, 7 ♂, 2 ♀ ; Muguga, on *Helichrysum*, 24.i.55, 2 ♀ ; Muguga, on *Chrysanthemum* (Compositae), 30.i.55, 8 ♂, 2 ♀ ; Muguga, on *Pentas lanceolata* (Forsk.) Deflers (Rubiaceae), 18.iv.56, 3 ♂, 1 ♀ ; Mt. Kulal (North Frontier Province), 6,500 ft., on *Pentas lanceolata*, 26.vii.58, 4 ♂, 1 ♀ ; all *B. Verdcourt*, in author's collection. A specimen in the Hungarian National Museum from TANGANYIKA : Arusha-Ju, xii.1905 (*Katona*) is apparently referable to this species ; it is larger than the average, its front tibiae and antennae are redder, and its elytral punctures slightly coarser and closer ; its ovipositor appears identical.

Variations.—The front tibiae and tarsi are often darker than in the type, especially amongst females, but all other characters seem remarkably constant.

Comparative notes.—The known species of the *forcipatus* group are all of somewhat similar appearance and closely related. *M. cornutus* is distinguished from *lividus* Easton and *livens* Grouvelle by its distinctly larger size, and from *vacca* sp. n. by the characters noted in the key.

Meligethes vacca sp. n.

Female.—Length, 1·7 ; breadth, 0·95 mm. Elongate, subparallel, moderately convex, black, somewhat shining, with normally conspicuous pubescence ; antennae and legs black. *Head* transverse, triangular, feebly convex ; clypeus with its anterior margin strongly bordered, widely, somewhat deeply, emarginate, its side angles sharp ; surface with punctures equal in size to eye facets, separated by slightly less than one diameter, spaces between them almost smooth. Antennae black, segments two and three reddish ; club short oval, two and a quarter times as wide and one and a half times as long as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (0·85 : 0·5 mm.), widest at basal fourth ; sides not strongly rounded, convergent anteriorly, very narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·85 : 0·55 mm.), almost straight, hind angles obtuse, bluntly pointed. Surface with punctures equal in size to eye facets, separated by one to one and a half diameters, spaces between them microscopically reticulate. *Elytra* as long as wide (0·95 mm.), widest at basal third, sides distinctly bordered, gently rounded and more convergent close to the widely rounded hind angles ; apex of each elytron gently curved ; sutural angles sharp, obtuse. Shoulders feebly raised, with an obsolete stria. Surface with punctures slightly larger than eye facets, separated by one diameter, surface between them obscurely reticulate. *Scutellum* with apex rounded, its surface minutely punctate and reticulate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process very slightly wider than antennal club, with apex rounded, sides bordered, surface with deep elongate punctures one and a quarter times as large as eye facets, separated by half a diameter, spaces between them smooth. Mesosternum impunctate, minutely reticulate. Metasternum with somewhat elongate punctures one and a half times as large as eye facets, separated by about half a diameter, the narrow spaces between them shallowly reticulate. Abdomen with all segments minutely punctate, their surface distinctly reticulate in irregular polygonal cells. Caudal marginal line of hind coxal cavity following very closely posterior edge of the latter, turning back shortly before reaching its outer end. *Legs* black. Anterior tibiae moderately dilated, nearly twice as wide as antennal club ; outer edge with crenulations from basal third gradually increasing in size to the subapical group comprising four bluntly pointed teeth of which the intermediate are the more prominent, so that their apices impart to the tibia an evenly rounded contour ; subtarsal plate moderately broad. Intermediate and hind tibiae less broadened, widest at middle and apical third respectively, their outer edges with fine close downwardly directed pegs. Inner edge of front tibiae almost straight, of intermediate and hind somewhat convex at basal third, scarcely visibly bordered. Front tarsi dilated, one and a quarter times as wide as antennal club, intermediate and hind half as wide ; last segment slightly shorter than first four together ; claws simple. *Genitalia* as figured (fig. 115). Ovipositor yellowish, with apex slightly darker ; somewhat acutely pointed, the short styli at a distance from apex equal to their length ; coxites with outer subdivisions moderately robust ; " central point " slightly nearer apex ; transverse suture straight.

Male.—Unknown. Presumably with well-marked secondary sexual characters on the last sternite.

Type ♀, Uganda : Kigezi District, Mabungo Camp, 6,000 ft., 20.xi.34 (*J. Ford*, B. M. East Africa Exp.) ; in British Museum (Natural History).

Paratype, one female with similar data to the type.

Variation.—The surface of the elytra between the punctures may be almost smooth.

Comparative notes.—Belonging to the *forcipatus* species-group, in which it closely resembles *M. cornutus*. This latter has the surface of the elytra more distinctly reticulate, its front tibiae are redder, and its ovipositor is more obtusely pointed, with shorter coxites. *M. vacca* is larger and slightly more rounded at the sides than *lividus* Easton and *livens* Grouvelle.

Meligethes clypeonitens sp. n. Kenya

Female.—Length, 1·65 ; breadth, 0·9 mm. Elongate, subparallel, moderately convex, shining black, with rather conspicuous punctures and fine greyish pubescence ; antennae and legs black, front tibiae paler. *Head* transverse, weakly convex ; clypeus with front margin distinctly bordered, with a wide shallow slightly angular excision, its side angles bluntly pointed, and its upper surface narrowly impunctate and shining ; surface with punctures equal in size to eye facets, separated by half a diameter. Antennae almost black, with second segment yellow-brown, club oval, one and a half times as long and twice as wide as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (0·8 : 0·45 mm.), widest very close to base ; sides gently rounded and more convergent anteriorly, very narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward slightly at each end to the obtuse, almost pointed, front angles. Hind margin longer than front (0·8 : 0·5 mm.), feebly convex, scarcely sinuate on either side of scutellum, hind angles obtusely pointed. Surface with punctures slightly larger than eye facets, separated by one and a half diameters, spaces between them obscurely aciculate. *Elytra* as long as broad (0·9 mm.), widest at second fifth, sides narrowly bordered, weakly rounded and convergent towards the widely rounded hind angles ; apex of each gently convex ; sutural angle obtusely pointed. Shoulders weakly raised, without a humeral stria. Surface with punctures ill-defined at their posterior edge, one and a half times as large as eye facets, separated by one and a half to two diameters ; spaces between them obscurely aciculate. *Scutellum* with apex rounded, its surface minutely punctate and transversely reticulate. *Pygidium* with surface granular. *Ventral surface* black, shining. Prosternal process narrow, scarcely broader than antennal club, with apex gently rounded, sides narrowly bordered ; surface with shallow punctures smaller than eye facets, separated by half to one diameter. Mesosternum impunctate. Metasternum with shallow rugose punctures equal in size to eye facets, separated by one and a half to two diameters, spaces between them indistinctly aciculate. Abdomen with first sternite finely and diffusely punctate, succeeding segments more closely so, surface of all aciculate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. *Legs* black, with front tibiae slightly reddish. Front tibiae (fig. 19) slightly dilated, nearly twice as wide as antennal club ; outer edge with small blunt teeth almost from base, then two large bluntly pointed subapical teeth separated by a smaller rounded one from the inconspicuous subtarsal plate. Intermediate and hind tibiae slightly narrower than front ; former subparallel, latter widest at apical fourth, their outer edges furnished with short close downwardly directed pegs, from basal fourth and third respectively, finer on the hind tibiae. Inner edge of front tibiae almost straight, of intermediate slightly, of hind distinctly, convex at basal third ; not bordered. Front tarsi as wide, intermediate and hind half as wide as antennal club ; last segment scarcely shorter than first four together ; claws simple. *Genitalia* as figured (fig. 116). Ovipositor unicolorous yellowish, somewhat abruptly contracted to its acuminate apex ; styli shorter than broad, inserted very close to apex ; outer subdivisions of coxites moderately long and broad ; " central point " central, without a ventral spicule ; transverse suture straight.

Male.—Not known.

Type ♀, Kenya : Kajiado (50 miles south of Nairobi), 5,800 ft., on *Sphaeranthus* (Compositae), 15.i.55 (*B. Verdcourt*). The type, in the author's collection, has the right hind tibia discoloured.

Paratypes, KENYA : same data, 7 ♀ ; in the author's collection.

Variations.—The outer edge of the front tibia is slightly variable, often with slight unevenness of the teeth, or the subapical group may include as many as three or four larger teeth. In this case the first and last tend to be rather larger than those between.

Biology.—All specimens seen were taken in January, at 5,800 ft., and are rather immature.

Comparative notes.—*M. clypeonitens* appears to occupy a rather isolated position, although its small size and the general appearance of its ovipositor suggest some relationship to the *forcipatus* species-group.

Meligethes heteropus Gerstaecker

M. heteropus Gerstaecker, 1871, *Archiv. f. Naturg.* **37** : 44.

Two females from the Baron von der Decken collection in the Zoological Museum of the Humboldt University, Berlin, which stand beside a label " *heteropus* Gerst.*, Kisuani, v.d. Decken " have been examined and dissected. The one bears no data, the other the number " 56438 ". They are conspecific, and agree with both the original and Gerstaecker's fuller (1873) description. The numbered specimen is now designated as lectotype.

With faint bronze metallic reflection ; pubescence somewhat long, silken, conspicuous. Antennae short, less than width of head, club small, two and a quarter times as wide, and one and a half times as long, as first antennal segment. Clypeus with front margin strongly bordered, widely emarginate, its side angles sharp. Pronotum one and a half times as wide as long. Surface of pronotum and elytra between the punctures with shallow indistinct reticulation. Prosternal process broad with rounded apex, its punctures slightly smaller than eye facets separated by one diameter. Metasternum with deep punctures, equal to eye facets, separated by one diameter, surface between them smooth. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter, turning back shortly before reaching its outer end. Outer edge of front tibiae (fig. 20) with distinct short broad blunt teeth in mid-third, followed by three large long teeth, of which the intermediate is smaller than the others, then a final very small tooth before the inconspicuous subtarsal plate. *Male :* unknown. *Female :* front tarsi three-quarters as wide as antennal club. Ovipositor (fig. 117) large, reddish-yellow ; inner subdivisions of coxites with apices curving outwards, bluntly rounded, their styli somewhat short, inserted on ventral surface some distance from apex ; outer subdivisions somewhat narrow ; " central point " central, with a short ventral spicule ; transverse suture straight.

TANGANYIKA : Kisuani.

Readily distinguished by the peculiar form of its ovipositor with bifurcate apex.

Meligethes pilosus sp. n.

Male.—Length, 2·5 ; breadth, 1·45 mm. Oval, moderately strongly convex, rather dull, brownish-black, with dense, long, fine, yellowish pubescence ; antennae and legs reddish-brown. *Head* transverse, almost flat ; clypeus with front margin narrowly bordered, widely but very shallowly emarginate, with side angles sharp ; surface with punctures equal in size to eye facets, separated by less than one diameter, spaces between them smooth. Antennae pale reddish-brown, with second segment lighter, club oval with apex subtruncate, one and a half times as long and twice as wide as first antennal segment. *Pronotum* transverse, one and two-thirds times as wide as long (1·45 : 0·9 mm.), widest almost at base ; sides gently rounded, and more convergent anteriorly, very narrowly bordered, not explanate. Anterior margin straight for width of neck curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·45 : 0·85 mm.), feebly convex, and distinctly sinuate on either side of scutellum ; hind angles obtusely pointed. Surface with punctures equal in size to eye facets, separated by less than one diameter, spaces between them smooth. *Elytra* shorter than broad (1·35 : 1·45 mm.), widest at basal fourth, sides narrowly bordered, gently curved and convergent towards the widely rounded hind angles ; apex of each gently convex ; sutural angle obtusely pointed. Shoulders feebly raised,

without a humeral stria. Surface with punctures equal in size to those of pronotum, separated by one to one and a half diameters; spaces between them apparently smooth. *Scutellum* with apex widely rounded, with surface minutely and very closely punctate. *Pygidium* with surface closely granular. *Ventral surface* blackish-brown, hind edges of metasternum and abdominal segments reddish; with long yellowish pubescence. Prosternal process broad, one and a half times as wide as antennal club, with apex gently rounded, sides finely bordered; surface with deep punctures equal in size to eye facets, separated by half to one diameter. Mesosternum with a few punctures close to hind angles; hind edge straight. Metasternum with punctures very slightly larger than eye facets, separated by half to one diameter, spaces between them smooth; with a narrow, median, longitudinal, raised ridge in the posterior three-fifths. Abdominal first sternite with punctures similar to those of metasternum; the succeeding segments very finely and closely punctate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. At the apex of the last sternite is a strongly curved narrow shining raised ridge, its concavity directed posteriorly, its width three-quarters that of antennal club. *Legs* reddish-brown. Front tibiae (fig. 21) moderately broadened, one and three-quarter times as wide as antennal club, outer edge finely crenulate to beyond middle, with a subapical group of small teeth of which the first and last are larger than the three between them; subtarsal plate broad. Intermediate and hind tibiae somewhat strongly broadened, widest at distal third and fourth respectively, their outer edges furnished from basal fourth with fine, very close, downwardly directed pegs. Inner edge of front tibiae almost straight, of intermediate and hind convex at basal third, finely bordered. Front tarsi two-thirds, intermediate and hind half, as wide as antennal club; last segment shorter than first four together; claws simple. *Genitalia* much elongate. Tegmen (fig. 74) with exceptionally long, spatulate, lateral lobes separated by a long slit-like apical excision; median lobe (fig. 75) much shorter than tegmen, with apex rounded.

Female.—Not known.

Type ♂, KENYA: Nairobi, Karura Forest, on *Pentas lanceolata* (Forsk.) Deflers (Rubiaceae), 24.vi.51 (*B. Verdcourt*). A unique specimen with left fore and right hind legs missing; in the author's collection.

Comparative notes.—Though sharing some characters, *viz.* similar general form, broad subtruncate antennal club, and a like type of male secondary sexual character on the last abdominal sternite, with members of the *aethiopicus* species-group, *M. pilosus* is quite dissimilar in many other respects, notably in its long conspicuous pubescence, in the finer punctures of its upper surface, in the shape of its pronotum, which is at its widest very close to the base (and reminiscent of that of *M. umbrosus* Sturm), and in the unusual form of the tegmen of its aedeagus.

Meligethes hargreavesi sp. n.

Male.—Length, 2·25; breadth, 1·35 mm. Broad oval, somewhat strongly convex, black, with short inconspicuous pubescence; antennae and legs pitchy reddish. *Head* strongly transverse, almost flat; clypeus with its anterior margin strongly bordered, deeply and widely emarginate, its side angles sharp; surface with deep punctures equal in size to eye facets, separated by less than one diameter, surface between them distinctly cross-reticulate. Antennae reddish with first segment slightly darker, second lighter; club broad, somewhat subtruncate, two and a quarter times as wide and nearly twice as long as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·25 : 0·75 mm.), widest at basal fourth; sides feebly curved to middle then more strongly rounded and convergent anteriorly, very narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·2 : 0·75 mm.), almost straight, with feeble sinuation on either side of scutellum, hind angles obtusely pointed. Surface with deep punctures nearly twice as large as eye facets, separated by less than one diameter, spaces between them reticulate. *Elytra* shorter than wide (1·2 : 1·35 mm.), widest at basal third, sides rather strongly bordered, gently rounded, and convergent towards the widely rounded hind angles; apex of each gently rounded; sutural angles sharp, obtuse. Shoulders moderately raised, an obsolete longitudinal stria external to each. Surface with punctures nearly three times as large as eye facets, shallower towards their hind part, separated by half a diameter, surface between them shallowly reticulate

in small polygonal cells. *Scutellum* with small shallow punctures, minutely reticulate. *Pygidium* with surface strongly and closely granular. *Ventral surface* black, with a reddish reflection from smooth hind edge of metasternum and first four ventral segments of abdomen. Prosternal process widened posteriorly, nearly twice as wide as antennal club, apex gently rounded, almost truncate, its punctures equal in size to eye facets separated by half to one diameter, surface between them smooth, sides very narrowly bordered. Mesosternum with hind edge shallowly bi-concave. Metasternum somewhat rugosely punctured, punctures twice as large as eye facets, separated by half a diameter, spaces between them smooth ; without obvious male secondary sexual character. Abdomen with first sternite punctured as metasternum, second to fifth much more finely ; last ventral segment with well-marked secondary sexual character in the form of a raised shining crescentic ridge, with the concavity directed backwards, a little distance in front of the middle of the hind edge, its width equal to that of antennal club. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back on reaching its outer end. *Legs* pitchy red, front tibiae lighter. Front tibiae (fig. 22) moderately dilated, one and two-thirds times as wide as antennal club, outer edge finely crenulate at base, with a slightly more prominent tooth at basal third, then with very small irregular sharp teeth to apical fourth, here a slightly larger more prominent tooth, then two shorter between it and the equally large penultimate tooth, last smaller ; subtarsal plate narrow. Intermediate and hind tibiae equally broadened to apical third and fourth respectively, outer edges with very short close downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind distinctly convex, extremely narrowly bordered. Front tarsi nearly two-thirds, intermediate and hind nearly half, as wide as antennal club ; last segment rather shorter than first four together ; claws simple. *Genitalia* somewhat short. Tegmen (fig. 76) with short rounded lateral lobes, its apical excision occupying a third of its width, and equally deep ; median lobe (fig. 77) subparallel, narrowing close to its flatly rounded apex.

Female.—Front tarsi half as wide as antennal club, intermediate and hind proportionately narrower ; last sternite simple. Ovipositor (fig. 118) with apex piceous ; bluntly pointed, with short styli, without a corona ; outer subdivisions of coxites long, not very narrow ; " central point " just short of centre, without a ventral spicule ; transverse suture slightly inverted, almost straight.

Type ♂, UGANDA : Kampala, 10.vi.1933 (*H. Hargreaves*) ; in British Museum (Natural History).

Paratypes, UGANDA : same data, 9 ex., including 1 ♂, 6 ♀ ; in British Museum (Natural History). Mount Elgon, 2,200 m., vii.25 (*Alinder*), 1 ♂, in the Zoologische Sammlung des Bayerischen Staates, München.

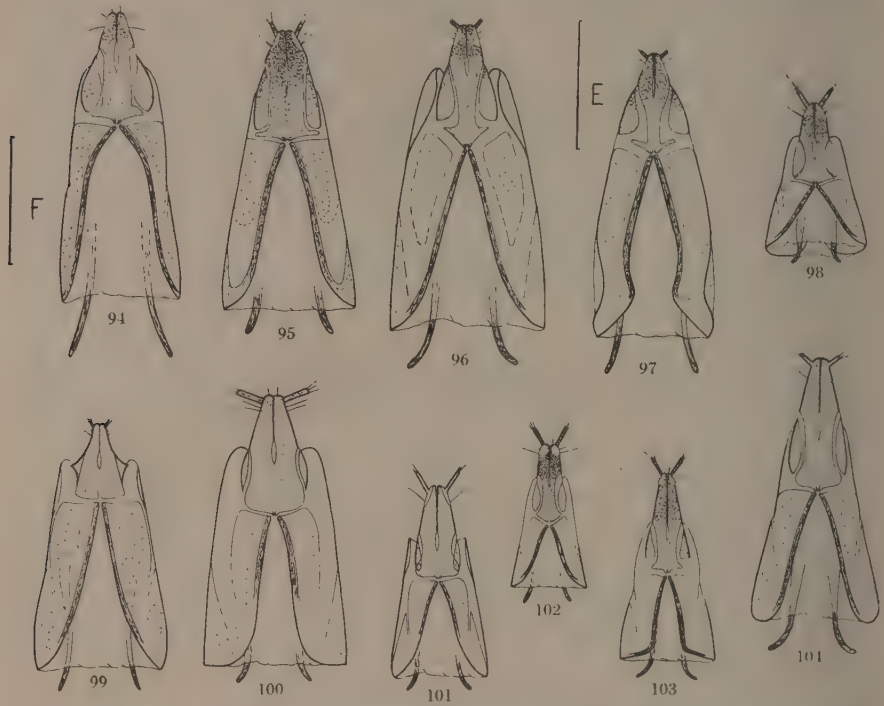
Variations.—Size varies considerably, from 1·75 to 2·3 mm. Though the teeth on the outer edge of the front tibiae are somewhat variable, one more prominent at the basal third, and a subapical group in which the first and penultimate are larger and more prominent than those between, are constant.

Comparative notes.—In the same species-group as, and very closely related to, *M. aethiopicus* Grouvelle. In this species the shining curved ridge on the last sternite of the male is less curved, forming about a fifth of a circle, in *hargreavesi* it is more so, forming about a third of a circle ; the genitalia are distinct in both sexes.

Meligethes hintoni sp. n.

Male.—Length, 2·2 ; breadth, 1·3 mm. Somewhat rounded at sides, rather strongly convex, shining black, with moderately conspicuous silvery recumbent pubescence ; antennae and legs dark pitchy-brown, front tibiae lighter. *Head* transverse, almost flat ; clypeus with front margin distinctly bordered, widely shallowly emarginate with a minute projection medially, side angles sharp ; surface with punctures equal in size to eye facets, separated by half to one diameter, spaces between them distinctly reticulate. Antennae with first segment and club pitchy-brown, segment two yellowish, succeeding segments gradually darker ; club broad oval with apex subtruncate, twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·2 : 0·7 mm.), widest at basal fourth ; sides feebly rounded posteriorly, much more rounded and convergent anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, then curving forward at each end to the

blunt obtuse front angles. Hind margin longer than front (1·2 : 0·7 mm.), gently convex, shallowly sinuate on either side of scutellum, curving forward at each end to the obtusely pointed hind angles. Surface with rather deep punctures scarcely larger than eye facets, separated by one diameter, spaces between them distinctly reticulate. *Elytra* slightly shorter than broad (1·15 : 1·3 mm.), widest at basal third, sides narrowly bordered, gently evenly rounded and convergent towards the widely rounded hind angles ; apex of each gently convex ; sutural angles obtusely pointed. Shoulders moderately raised, with a trace of a humeral stria. Surface with elongate punctures nearly twice as large as those of pronotum, less well-defined at their apex, separated by less than one diameter ; spaces between them shallowly reticulate ; punctures finer and reticulation more evident towards apex. *Scutellum* with apex rounded, surface distinctly reticulate,



Figs. 94–104.—Ventral view of ovipositors : (94) *Meligethes favus* sp. n. (95) *M. subcaeruleus* Grouvelle. (96) *M. gemma* sp. n. (97) *M. sjöstedti* Grouvelle. (98) *M. carbunculus* sp. n. (99) *M. assutus* sp. n. (100) *M. edwardsi* sp. n. (101) *M. rubiginosus* Grouvelle. (102) *M. johnsi* sp. n. (103) *M. varus* sp. n. (104) *M. leucasi* sp. n. Scale E (fig. 97) = 0·35 mm. Scale F (figs. 94–96, 98–104) = 0·25 mm.

with fine punctures separated by one and a half to two diameters. *Pygidium* with surface closely granulate. *Ventral surface* black, hind edges of abdominal sternites with a reddish reflection. Prosternal process broad, one and a third times as wide as antennal club, with apex subtruncate, sides finely bordered ; surface with deep punctures equal in size to eye facets, separated by half to one diameter. Mesosternum with posterior edge straight. Metasternum with deep punctures slightly larger than eye facets, separated by half to one diameter, spaces between them smooth ; without secondary sexual character. Abdomen with first sternite punctured as metasternum, the succeeding segments much more finely and closely punctate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. At its apex last sternite exhibits a shining curved ridge, its concavity directed backwards, forming almost a half circle, its width almost equal to that of antennal club. *Legs* pitchy-brown with front tibiae lighter, reddish. Front tibiae (fig. 23) moderately broadened, one

and a half times as wide as antennal club, outer edge with a small more prominent tooth at basal third, followed by smaller teeth, then a subapical group of slightly larger subequal bluntly pointed teeth (differing slightly on the two sides); subtarsal plate somewhat narrow. Intermediate and hind tibiae equally wide, widest at middle and apical third respectively, their outer edges furnished from basal third with a single row of fine close downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind weakly convex at basal third; all very finely bordered. Front tarsi half, intermediate and hind one-third, as wide as antennal club; last segment slightly shorter than first four together; claws simple. *Genitalia* as figured. Tegmen (fig. 78) with small divergent U-shaped apical excision between short evenly rounded lateral lobes; median lobe (fig. 79) with apex obtusely pointed.

Female.—Not known.

Type ♂, KENYA: Nairobi, Karura Forest, on *Pentas lanceolata* (Forsk.) Deflers, subsp. *quartiniana* (A. Rich) Verdcourt, var. *nemorosa* (Chior.) Verdcourt (Rubiaceae), 11.vii.51 (*B. Verdcourt*); a unique specimen in the author's collection.

Comparative notes.—Closely related to *M. hargreavesi* sp. n. and to *M. aethiopicus* Grouvelle, but less rounded at the sides, and with its aedeagus distinct; *M. hintoni* is noticeably pubescent as compared with the former, and of much smaller size than the latter.

Meligethes aethiopicus Grouvelle

M. aethiopicus Grouvelle, 1908, *Bull. Mus. Paris* **7** : 366.

M. aethiops Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–06, **1** : 316, **syn. nov.** *nec* (Latreille), 1807.

M. meruensis **Easton, 1950, *Ent. mon. Mag.* 86 : 308, syn. nov.**

The type (♀) and co-type (♂) of *aethiopicus* from the Muséum National d'Histoire Naturelle, Paris, have been compared with the two specimens of *aethiops* in the Naturhistoriska Riksmuseum, Stockholm, the one (♀) labelled as being the type, from lower Meru, 1.xii.05 (*Sjöstedt*), the other (♂) from lower Meru, i (*Sjöstedt*), and with the additional data " Ngare nanyuki ". Their genitalia agree, and although these last two have the surface between the punctures of the elytra virtually smooth, it seems certain that all four are conspecific.

Additional material studied comprises 13 ex. from EAST AFRICA: Shirati, ii, iii, and iv.1909 (*Katona*) in the collection of the Hungarian National Museum, Budapest, and 5 ex. from KENYA: Sotik, on *Crotalaria agatiflora* Schweinf. (Leguminosae) 15.vi.53 (*B. Verdcourt*), 1 ♂, 4 ♀, in the author's collection.

The species has previously been shortly redescribed and its genitalia figured (Easton, 1959: 379–80, figs. 28, 29 and 61).

Meligethes elgonensis sp. n.

Male.—Length, 1·6; breadth, 0·95 mm. Elongate oval, moderately strongly convex, slightly reddish-black, shining, with short not very conspicuous pubescence, antennae and legs dark pitchy-reddish. *Head* strongly transverse, feebly convex; clypeus with anterior margin widely, shallowly emarginate, side angles sharp; surface with punctures equal in size to eye facets, separated by one diameter, spaces between them reticulate. Antennae reddish, second segment lighter; club broad, subtruncate, two and a quarter times as wide and nearly twice as long as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (0·9 : 0·5 mm.), widest at basal fourth; sides gently rounded and feebly convergent posteriorly, more strongly anteriorly, very narrowly bordered, not explanate. Anterior margin concave, front angles bluntly obtuse. Hind margin longer than front (0·85 : 0·6 mm.), weakly convex, moderately sinuate on either side of scutellum, hind angles blunt, obtuse. Surface with punctures scarcely larger than eye facets, separated on disc by one and a half to two diameters, elsewhere by about one diameter, the spaces between them with distinct mostly transverse reticulation. *Elytra* as long as wide (0·9 : 0·95 mm.), widest at basal third, sides narrowly bordered, gently rounded and more convergent

posteriorly ; hind angles widely rounded ; apex of each gently convex ; sutural angles sharp, obtuse. Shoulder feebly raised, humeral stria scarcely recognisable. Surface with shallow punctures three times as large as eye facets, shallower at their hind edge, their floor almost flat, separated by one diameter, and showing feeble transrugosity towards base, spaces between them obscurely reticulate, strongly so towards apex. *Scutellum* with apex rounded, minutely punctate, surface reticulate. *Pygidium* with surface coarsely granular. *Ventral surface* concolorous with dorsum. Prosternal process much dilated to its subtruncate apex, twice as wide as antennal club ; sides narrowly bordered ; surface with punctures equal in size to eye facets, separated by half a diameter, spaces between them smooth. Metasternum with punctures equal in size to eye facets, separated by one diameter, surface between them smooth ; without secondary sexual character. Abdomen with first segment having equally large shallow punctures, the succeeding segments finely punctate, surface of all between the punctures microscopically reticulate. Caudal marginal line of hind coxal cavity deviating somewhat on to first sternite then rejoining its posterior edge before turning back close to its outer end. At its extreme apex edge of last sternite very slightly thickened and shining. *Legs* dark pitchy reddish. Anterior tibiae not strongly dilated, one and two-thirds times as wide as antennal club ; outer edge with a sharp prominent tooth at basal third, then with five or six small subequal teeth, followed by the subapical group of four or five larger teeth, of which first and penultimate are larger and more prominent than those between; subtarsal plate inconspicuous. Intermediate and hind tibiae broadened to apical third and fourth respectively, outer edges with fine close downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind moderately strongly convex especially at basal third, with an extremely narrow raised border. Front tarsi half, intermediate and hind one-third, as wide as antennal club ; last segment narrow, as long as first four together ; claws simple. *Genitalia* as figured (figs. 80 and 81). Tegmen with short, somewhat obliquely truncate, lateral lobes, and small shallow concave apical excision ; median lobe subparallel with apex feebly pointed.

Female.—Unknown.

Type ♂, East Africa : Mt. Elgon, 2,200 m., v.1925 (*Alinder*) ; in the Zoologische Sammlung des Bayerischen Staates, München.

Comparative notes.—Apparently closely related to *M. aethiopicus* Grouvelle and others in its species-group, but smaller, with quite distinct male genitalia, and a less developed secondary sexual character on the last sternite.

Meligethes profugus sp. n.

Female.—Length, 2·4 ; breadth, 1·45 mm. Long oval, rather strongly convex, somewhat shining, black, with fine recumbent yellowish pubescence ; antennae and legs pitchy reddish-brown. *Head* transverse, weakly convex ; clypeus with front margin distinctly bordered, widely emarginate with side angles sharp ; surface with punctures equal in size to eye facets, separated by one diameter, spaces between them almost smooth. Antennae with first segment pitchy, succeeding segments yellowish, gradually darkening to the reddish club, latter long oval, twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, one and three-quarter times as wide as long (1·35 : 0·8 mm.), widest at basal fifth ; sides gradually convergent and more strongly rounded anteriorly, very narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·35 : 0·75 mm.), slightly convex, and distinctly sinuate on either side of scutellum, hind angles obtuse, almost rounded off. Surface with deep punctures one and a half times as large as eye facets, separated by one to one and a half diameters, spaces between distinctly closely reticulate. *Elytra* shorter than broad (1·25 : 1·45 mm.), widest at basal fourth, sides narrowly bordered, gently rounded and convergent towards the widely rounded hind angles ; apex of each distinctly convex ; sutural angle obtuse, pointed. Shoulders feebly raised, without a humeral stria. Surface with punctures shallower and ill-defined at their posterior edge, three times as large as eye facets, separated by one to one and a half diameters ; spaces between them shallowly closely reticulate. *Scutellum* triangular with apex rounded, surface distinctly cross-reticulate, impunctate except for a single peripheral row of shallow punctures at sides and apex. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process broad, nearly twice as wide as antennal club, with apex truncate, sides bordered ; surface with deep punctures slightly larger than eye facets, separated by one and a half diameters, but absent close to apex, spaces between

them smooth. Mesosternum with hind edge straight. Metasternum with deep punctures twice as large as eye facets, separated by one to one and a half diameters, spaces between them in centre smooth ; in middle at anterior third the surface is raised as a low slightly transverse eminence. Abdomen with first segment rather more finely, shallowly, and closely punctate than metasternum, the succeeding segments much more so. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. *Legs* pitchy reddish-brown. Front tibiae (fig. 24) subparallel, nearly twice as wide as antennal club, outer edge with a blunt prominent tooth at basal third separated by a series of small subequal teeth from a subapical group of large teeth of which first and penultimate are more prominent than those between ; subtarsal plate not conspicuous. Intermediate and hind tibiae slightly broader than front, their outer edges furnished from basal fourth and third respectively with close downwardly directed pegs. Inner edge of front tibiae almost straight, of intermediate weakly convex, of hind rather strongly so, especially at basal third ; of all extremely finely bordered. Front tarsi three-fifths, intermediate and hind one-third, as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* as figured (fig. 119). Ovipositor entirely yellowish, sharply pointed ; its styli three times as long as wide, at a distance from apex equal to half their length ; coxites with outer subdivisions moderately short ; " central point " centrally placed, without a ventral spicule ; transverse suture straight.

Male.—Unknown.

Type ♀, East Africa.—A unique specimen in the Muséum National d'Histoire Naturelle, Paris, bearing no other data but " Zanguebar " in manuscript on a blue card.

Comparative notes.—Very similar to *elgonensis* sp. n., but larger, and distinguished by the different arrangement of the three more prominent teeth on the outer edge of the front tibiae, and of the scutellary punctures. Examination of further material is desirable, it being possible that the two are identical. In general appearance *M. profugus* is very similar to members of the *aethiopicus* species-group, but in these latter the ovipositor, where known, is differently shaped and piceous at its apex. In the two following species (*M. voeltzkowi* Grouvelle and *M. mimetes* Grouvelle) general form is again rather similar, but the antennal club is much narrower and the ovipositors have the " central point " much nearer the apex.

Meligethes voeltzkowi Grouvelle

M. voeltzkowi Grouvelle, 1913, *in* Voeltzkow, *Reise in Ostafrika* 3 : 413.

The female type, from Pemba Island : Chake-Chake, is in the Muséum National d'Histoire Naturelle, Paris, and carries a manuscript name tag. Examination shows it to agree with Grouvelle's description, and it is now designated as lectotype. A second specimen (♀) from East Africa, to which he also referred in his original description, is labelled " type " and " *Meligethes voeltzkowi* var." in Grouvelle's handwriting. It is conspecific with the lectotype.

By comparison five other examples (which are thus homotypes) have been determined from Uganda : Kampala, 10.vi.33 (*H. Hargreaves*) ; in the Commonwealth Institute of Entomology.

Length varies from 1·9 to 2·8 mm. Colour black, without metallic reflection ; antennal club small, elongate, oval ; front margin of clypeus widely emarginate with side angles sharp ; elytral punctures shallow, nearly three times as large as eye facets, separated by one diameter, each with a fine hair so short as not to attain the hind edge of the puncture ; surface between punctures of pronotum and elytra with reticulation formed of minute polygonal cells ; scutellum minutely cross-reticulate, impunctate, or very nearly so ; prosternal process strongly dilated, two and a half times as wide as antennal club, its apex truncate ; caudal marginal line of hind coxal cavity describing a low arc subparallel to posterior edge of latter which it rejoins close to its outer end immediately before turning sharply backwards. *Male :* front tarsus three-quarters as wide as antennal club ; metasternum without secondary sexual character ; close to apex of last sternite is a shining transverse ridge, slightly curved with its concavity backwards, its length slightly

exceeding width of antennal club. Aedeagus narrow, elongate. Tegmen (fig. 82) rounded at apex with minute U-shaped excision ; median lobe (fig. 83) subparallel with rounded apex. *Female :* front tarsi two-thirds as wide as antennal club ; last sternite simple. Ovipositor (fig. 120) small, bluntly pointed, somewhat piceous at apex ; with very short styli inserted terminally ; " central point " at apical third, without a ventral spicule ; transverse suture widely V-shaped.

Meligethes mimetes Grouvelle

M. mimetes Grouvelle, 1909, *in* Sjöstedt, *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u. s. w.*, 1905–06, **1** : 313.

Through the generosity of Dr. René Malaise it has been possible to examine and dissect the unique type of *M. mimetes* in the collection of the Naturhistoriska Riksmuseum, Stockholm. The specimen was taken on the lower slopes of Meru, 27.xii (*Sjöstedt*).

The following details are supplementary to the already excellent description given by Grouvelle :

Length, 2·1 mm.; antennal club small, elongate oval, twice as wide and one and a half times as long as first antennal segment ; clypeus with front margin bordered, widely shallowly emarginate, with side angles sharp ; pronotum less than twice as wide as long (1·2 : 0·75 mm.), widest extremely close to base, sides narrowly bordered, not explanate ; pronotal punctures as large as eye facets, separated by one to one and a half diameters, surface between them microscopically reticulate ; elytral punctures slightly larger than eye facets, each puncture ill-defined posteriorly, separated by one to one and a half diameters, surface between them very obsoletely reticulate ; front tarsi (♀) scarcely more than half as wide as antennal club ; prosternal process twice as wide as antennal club, with apex subtruncate. Ovipositor (fig. 121) small, unicolorous yellowish ; bluntly pointed, with very short styli inserted almost at apex ; outer subdivisions of coxites short ; " central point " at apical third, without a ventral spicule ; transverse suture straight.

Meligethes perfectus sp. n.

Female.—Length, 2·4 ; breadth, 1·35 mm. Oval, rather strongly convex, not very shining, black, with fine, recumbent, somewhat conspicuous, pale pubescence ; front tibiae and antennae pitchy reddish-brown. *Head* transverse, almost flat ; clypeus with front margin distinctly bordered, widely, moderately deeply, emarginate, with side angles sharp; surface with punctures equal in size to eye facets, separated by half to one diameter, spaces between them smooth, Antennae with first segment almost black, second yellowish, succeeding segments and club gradually darker pitchy reddish-brown ; club oval, one and a third times as long and twice as wide as first antennal segment. *Pronotum* transverse, less than twice as wide as long (1·25 : 0·75 mm.), widest at base ; sides convergent and feebly rounded posteriorly, much more so anteriorly, extremely narrowly bordered, not explanate. Anterior margin straight for width of neck curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·25 : 0·65 mm.), slightly convex, and distinctly sinuate on either side of scutellum, curving forward at each end to the blunt obtuse hind angles. Surface with punctures scarcely larger than those of head, separated by less than one diameter, spaces between them smooth. *Elytra* slightly shorter than broad (1·25 : 1·35 mm.), widest at basal fourth, sides very narrowly bordered, gently curved and convergent towards the widely rounded hind angles ; apex of each weakly convex ; sutural angle obtuse, pointed. Shoulders not strongly raised, with a trace of a humeral stria. Surface with punctures nearly three times as large as eye facets, separated by half a diameter, each shallower towards its hind end ; spaces between them with irregular traces of aciculation. *Scutellum* with apex rounded, surface very finely and closely punctate. *Pygidium* with surface closely and finely granular. *Ventral surface* black. Prosternal process exceptionally broad, two and a half times as wide as antennal club, with apex almost truncate, sides bordered ; surface with deep punctures equal in size to eye facets, separated by half a diameter, absent close to apex. Metasternum with deep punctures slightly larger than eye facets, separated by half to one diameter, spaces between them smooth, punctures absent along its posterior edge. Abdomen with first segment punctured almost as metasternum, succeeding segments with shallower fine close punctures, and surface between them reticulate. Caudal marginal line of the hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. *Legs* black, front tibiae

pitchy reddish-brown, tarsi with basal segments reddish. Front tibiae (fig. 26) gradually broadened, nearly twice as wide as antennal club, outer edge finely irregularly crenulate to apical fourth, then with a group of about five small uneven rather blunt teeth ; subtarsal plate inconspicuous. Intermediate and hind tibiae slightly broader than front ; outer edge of former evenly rounded, of latter more convex at apical third, furnished from basal third with fine close downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind convex at basal third ; all finely bordered. Front tarsi two-thirds, intermediate and hind half, as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* as figured (fig. 122). Ovipositor reddish-yellow, with apex piceous ; rather blunt, without a corona ; styli rather short, very close to apex and projecting beyond it ; outer subdivisions of coxites moderately broad, rather short ; " central point " slightly nearer to apex, without a ventral spicule ; transverse suture straight.

Male.—Unknown.

Type ♀, ZANZIBAR : Jozani Hill, on *Emilia coccinea* (Sims) G. Don, *sens. lat.* (Compositae), 7.v.50 (*D. Johns*) ; in the author's collection. A unique specimen.

Comparative notes.—Closely related to the following species (*q.v.*) with which it may perhaps be segregated in a *perfectus* species-group.

Tanganyika

✓Meligethes imperfectus sp. n.

Female.—Length, 2·4 ; breadth, 1·35 mm. Oval, moderately strongly convex, not very shining, black, with rather long conspicuous pale pubescence ; antennae and legs almost black. *Head* transverse, feebly convex ; clypeus with front margin narrowly bordered, widely, somewhat deeply, emarginate, with side angles sharp ; surface with punctures slightly smaller than eye facets, separated by one and a half diameters, spaces between them obsoletely reticulate. Antennae dark piceous, with segment one black ; club oval, small, scarcely longer than, and one and two-thirds times as wide as, first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·2 : 0·7 mm.), widest at basal fourth ; sides gently rounded, weakly convergent to base, more strongly rounded and convergent anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·15 : 0·8 mm.), almost straight, but weakly sinuate on either side of scutellum, hind angles obtuse and narrowly rounded off. Surface with punctures equal in size to eye facets, separated by one diameter, spaces between them shallowly, indistinctly reticulate. *Elytra* as long as broad (1·35 mm.), widest at basal third, sides narrowly bordered, gently curved, and convergent towards the widely rounded hind angles ; apex of each moderately convex ; sutural angle obtusely pointed. Shoulders feebly raised, with only a trace of a humeral stria. Surface with deep punctures nearly twice as large as eye facets, separated by less than one diameter; spaces between them shallowly, obscurely reticulate. *Scutellum* with surface granulo-reticulate anteriorly, finely and closely punctate towards its rounded apex. *Ventral surface* black. Prosternal process broad, nearly twice as wide as antennal club, with apex subtruncate, sides narrowly bordered ; surface with deep punctures slightly smaller than eye facets, separated by about one diameter. Mesosternum unpunctured, reticulate. Metasternum with deep punctures slightly larger than eye facets, separated by half a diameter, spaces between them smooth. Abdomen with first sternite punctured as metasternum, the succeeding segments extremely finely, and very closely, punctate, surface between the punctures of all minutely reticulate. Caudal marginal line of hind coxal cavity deviating slightly from posterior edge of the latter and turning back shortly before reaching its outer end. *Legs* black, front tibiae obscurely reddish. Front tibiae (fig. 27) subparallel, moderately broad, nearly twice as wide as antennal club, outer edge with a minutely more prominent tooth at basal third and a group of about six rather small somewhat pointed subequal teeth before the apex ; subtarsal plate inconspicuous. Intermediate and hind tibiae about as wide as front, former with outer edge evenly rounded, latter more abruptly rounded and narrowed at apical fourth, their outer edges furnished from basal fourth with fine close-set downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind convex at basal third ; of intermediate and hind narrowly bordered. All tarsi about two-thirds as wide as antennal club ; last segment equal to first four together ; claws simple. *Genitalia* as figured (fig. 123). Ovipositor entirely yellow, somewhat sharp, without a corona ; its styli rather short, at a distance from apex equal to their length ; coxites with outer subdivisions moderately

broad and long; " central point " central, without a ventral spicule; transverse suture straight.

Male.—Unknown.

Type ♀, TANGANYIKA: Kilimandjaro, Marangu, 1,500 m., 21.x.1952 (*Lindemann* and *Pavlitzki*); in the Zoologische Sammlung des Bayerischen Staates, München. A unique specimen with part of the left antenna, the right front tarsus and left hind leg missing.

Comparative notes.—*M. imperfectus* is recognisable by its oval form and conspicuous pubescence. It is however very similar to the preceding species, being distinguished by its longer and more evident pubescence, and by its slightly wider tibiae, of which the front are more subparallel. The ovipositors are distinct.

Meligethes rileyi sp. n.

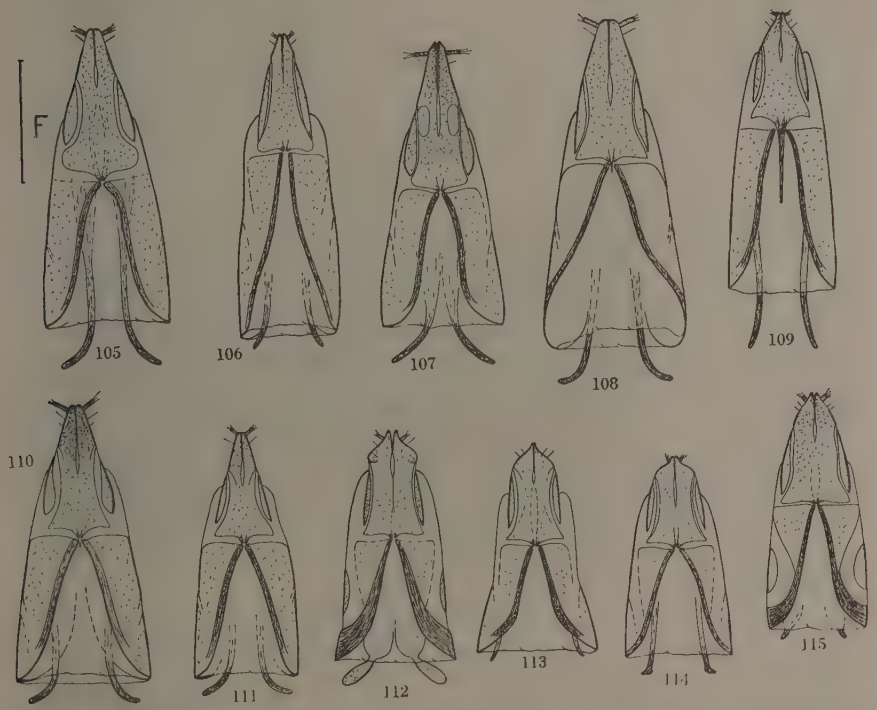
Male.—Length, 3·1; breadth, 1·5 mm. Elongate somewhat parallel-sided, moderately convex, rather dull, black, with pale golden somewhat long fine pubescence; legs pitchy reddish-brown with their edges darker. *Head* transverse, flat; clypeus with anterior margin strongly and widely emarginate, with side angle sharp; surface very finely and densely punctate, punctures equal in size to eye facets, separated by half a diameter; pubescence fine, dense, not very conspicuous. Antennae black, except second segment reddish-brown; club oval, one and a half times as long and twice as wide as first antennal segment. *Pronotum* not quite twice as wide as long (1·4 : 0·85 mm.), widest at basal third; sides gradually rounded, slightly more so towards anterior angles, narrowly bordered. Front margin straight for width of neck, curving forward slightly at each end to the rounded obtuse front angles. Hind margin distinctly longer than front (1·3 : 0·85 mm.), feebly rounded, with a distinct gradual sinuation on either side of scutellum; hind angles obtuse and bluntly rounded. Surface finely and densely punctate, punctures about one and a half times as large as those of head and separated by half to one diameter, the very narrow spaces between them finely reticulate. *Elytra* scarcely longer than broad (1·6 : 1·5 mm.), widest in middle and here slightly wider than pronotum, sides feebly rounded to apical fourth, then curving evenly inwards, apex of each gradually rounded; of moderate convexity, in the longitudinal direction continuous with that of pronotum and head. Surface densely and rather finely punctate, punctures about twice as large as those of head, separated by less than one diameter, each puncture shallower and less well defined at its hind end; the narrow spaces between them finely indistinctly reticulate. *Scutellum* transverse, with apex somewhat rounded; surface in major part unpunctured and reticulate, but a marginal area at apex smooth and shining, and between these two areas an irregular row of punctures each bearing a fine hair. *Pygidium* finely and densely granulate. *Ventral surface* black. Prosternal process slightly broadened to its rounded apex, one and a quarter times as wide as antennal club; its punctures about as large as eye facets separated by half to one diameter. Metasternum somewhat more coarsely, equally closely punctured, with a shallow median longitudinal impression most marked posteriorly, and not quite attaining its anterior extremity. Abdomen with first sternite punctured as coarsely and closely as metasternum, but much more shallowly; second to fifth sternites very much more finely punctate. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning backwards very shortly before reaching its outer end. Close to apex of last sternite is a shining raised ridge, strongly curved, its concavity directed caudally, its length equal to three-quarters the width of antennal club. *Legs* pitchy reddish-brown, with the teeth and pegs on their outer edges, and fifth tarsal segment, black. Anterior tibiae (fig. 28) almost parallel-sided from basal third, outer edge furnished with well-formed teeth of which a larger more prominent one at basal third is followed by four small yet distinct teeth, succeeded by a subapical group of four larger sharp teeth of which the second and fourth are less prominent than first and third. Intermediate and hind tibiae as wide as front, former widest in middle with outer edge rounded, latter at apical fifth with outer edge almost straight in its proximal part and rounded inwards towards apex; their outer edges with close-set short stout spines; their inner edges slightly convex throughout. Front tarsi somewhat dilated, about as wide as antennal club; last segment a little shorter than first four together; claws simple. *Genitalia* as figured (figs. 84 and 85). Tegmen with obliquely rounded lateral lobes separated by a deep, narrow, U-shaped, apical excision; median lobe with apex bluntly, obtusely pointed.

Female.—All tarsi narrower, fore pair slightly narrower than antennal club; metasternum without impression and last ventral segment of abdomen simple. Ovipositor (fig. 124) with apex

pigmented, somewhat long and sharply pointed ; coxites with outer subdivisions long and narrow ; with a long narrow ventral spicule.

Type ♂, KENYA : Mount Kenya, Kathita River, 9,900 ft., on flowers of *Protea kilimandsharica* Engler (Proteaceae), 10.viii.1949 (*J. A. Riley*, Oxford University Exploration Club Expedition, 1949) ; in British Museum (Natural History).

Paratypes, KENYA : same data, 21 ex., including both sexes, and 4 ex. taken on 11–12.viii.49. Additional material seen from TANGANYIKA : Masai District, Oldeani Mountain, 10,000 ft., in flowers of *Protea kilimandsharica* Engler (*J. J. Greenway*), 5 ♂, 6 ♀ (found crushed in herbarium specimens, communicated by B. Verdcourt) ; in the author's collection.



FIGS. 105–115.—Ventral view of ovipositors : (105) *Meligethes fulvidus* Grouvelle. (106) *M. equus* sp.n. (107) *M. verdcourti* sp. n. (108) *M. gloriosus* Grouvelle. (109) *M. montivagus* sp. n. (110) *M. sellaris* sp. n. (111) *M. lornae* sp. n. (112) *M. paraproctatus* sp. n. (113) *M. astylus* sp. n. (114) *M. cornutus* sp. n. (115) *M. vacca* sp. n. Scale F = 0·25 mm.

Variations.—There is the usual slight variability in the teeth on the outer edge of the front tibiae, but the basic pattern in which a larger more prominent tooth at the basal third is separated by a series of smaller ones from a group of larger teeth close to the apex is constant.

Comparative notes.—Somewhat closely related to *M. imperator* Easton and *M. subexilis* Grouvelle from Abyssinia, and with rather similar secondary sexual characters in the male. Readily distinguished by its more coarsely and closely punctate upper surface, the larger teeth on the outer edge of its front tibiae, and by its reddish legs.

Meligethes amplimanus sp. n.

Male.—Length, 2·2; breadth, 1·2 mm. Subparallel, moderately strongly convex, black, somewhat shining, with rather short inconspicuous pubescence; antennae and legs almost black. *Head* transverse, weakly convex; clypeus with front margin distinctly bordered, widely moderately deeply emarginate, with side angles sharp; surface with punctures rather smaller than eye facets, separated by one diameter, spaces between them smooth. Antennae with first segment almost black, second dark reddish, then gradually darkening to the reddish-brown club; club oval, twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (1·05 : 0·7 mm.), widest almost at base; sides nearly straight and gradually converging to anterior third, then curving strongly inwards, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·05 : 0·6 mm.), feebly convex, shallowly sinuate on either side of scutellum, hind angles obtusely pointed. Surface with punctures equal in size to eye facets, separated by half to one diameter, spaces between them smooth. *Elytra* as long as broad (1·2 mm.), widest at second fifth, sides narrowly bordered, rather weakly rounded and convergent towards the widely rounded hind angles; apex of each gently rounded; sutural angle obtusely pointed; shoulders weakly raised, with a faint humeral stria. Surface with punctures scarcely larger than eye facets separated by one diameter; spaces between them smooth. *Scutellum* with apex rounded, surface minutely reticulate, and with fine discrete punctures. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process slightly wider than antennal club, with apex rounded, sides narrowly bordered; surface with punctures equal in size to eye facets separated by half a diameter, spaces between them smooth. Metasternum with deep punctures, one and a half times as large as eye facets, separated by half a diameter, spaces between them smooth; without secondary sexual character. Abdomen with first sternite punctured as metasternum, succeeding segments much more finely and closely punctate; last sternite without secondary sexual character. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back at its outer fourth. *Legs* dark reddish-black. Front tibiae (fig. 29) strongly dilated, one and a half times as wide as antennal club, outer edge with a wide prominent tooth at basal third, followed by three small subequal teeth, then three large, long, backwardly curving teeth before apex; subtarsal plate broad, conspicuous. Intermediate and hind tibiae narrower than front, widest at basal third and middle respectively, their outer edges furnished with close short downwardly directed pegs, finer on hind pair. Inner edge of front tibiae weakly convex at distal third, of intermediate and hind at proximal third; not bordered. Front tarsi one and a third times, intermediate two-thirds, hind half, as wide as antennal club; last segment slightly shorter than first four together; claws simple. *Genitalia* as figured (figs. 86 and 87), moderately elongate. Tegmen with short U-shaped apical excision and flatly rounded lateral lobes; median lobe somewhat pointed.

Female.—Unknown.

Type ♂, TANGANYIKA: Usangu (Urori) District, 3,500–4,500 ft., 29.xi–15.xii.1910 (*S. A. Neave*); in British Museum (Natural History).

Comparative notes.—Extremely similar, especially in the form of the front tibiae and tarsi, to the Abyssinian *M. latimanus* Easton, and very closely related. The new species is somewhat more robust with its pronotum widest nearer to the base, and has less conspicuous pubescence; the last abdominal sternite is without secondary sexual character; its genitalia are more elongate, the apical excision of the tegmen slightly deeper and more parallel-sided, and the median lobe slightly more pointed.

Meligethes lepelleyi sp. n.

Male.—Length, 2·4; breadth, 1·15 mm. Elongate, subparallel, moderately convex, black, somewhat shining, with greyish recumbent pubescence; antennae and legs black. *Head* transverse, slightly convex; clypeus with front margin distinctly bordered, widely, rather shallowly emarginate, with side angles sharp; surface with deep punctures slightly larger than eye facets, separated by half a diameter, spaces between them microscopically reticulate. Antennae black, segment two slightly reddish; club oval, one and a half times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (1·1 : 0·65 mm.), widest at basal third; sides gently curved, scarcely convergent posteriorly, more so

anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (1·05 : 0·65 mm.), feebly convex, scarcely sinuate on either side of scutellum, hind angles obtusely pointed. Surface with punctures equal in size to those of head, separated by one diameter, to one and a half or two on disc, spaces between them distinctly reticulate. *Elytra* slightly longer than broad (1·3 : 1·15 mm.), widest at second fifth, sides narrowly bordered, gently rounded and convergent towards the widely rounded hind angles ; apex of each flatly rounded ; sutural angle obtusely pointed. Shoulders slightly raised, without a humeral stria. Surface with punctures equal in size to those of head and pronotum, separated by two to two and a half diameters ; spaces between them distinctly reticulate. *Scutellum* with apex rounded, surface minutely reticulate, with fine, evenly distributed punctures. *Pygidium* with surface finely, closely, granulo-reticulate. *Ventral surface* black. Prosternal process one and a quarter times as wide as antennal club, with apex rounded, sides narrowly bordered ; surface with deep punctures about equal to eye facets, separated by half to one diameter, spaces between them smooth. Mesosternum with a few deep punctures close to hind angles. Metasternum with deep punctures one to one and a half times as large as eye facets, separated by about one diameter, spaces between them smooth ; without secondary sexual character. Abdomen with first sternite having shallow punctures rather smaller than those of metasternum, separated by half to one diameter, surface between them reticulate ; the succeeding segments extremely finely, closely punctate, with surface reticulation. Caudal marginal line of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. Last ventral segment without secondary sexual character. *Legs* black. Front tibiae (fig. 30) subparallel, one and a half times as wide as antennal club, outer edge with small sharp irregular teeth including one more prominent near basal third and a tendency to a subapical group of slightly larger teeth ; subtarsal plate inconspicuous. Intermediate and hind tibiae slightly narrower than front, former tapering slightly from basal third, latter from middle ; outer edges with short, close-set, downwardly directed pegs from basal fifth and third respectively. Inner edge of front tibiae almost straight, of intermediate and hind weakly convex at basal third ; scarcely bordered. Front tarsi very slightly wider than antennal club, intermediate and hind two-thirds and half as wide respectively ; last segment almost equal to first four together ; claws simple. *Genitalia* somewhat elongate (figs. 88 and 89). Tegmen narrowed from middle, its rounded lateral lobes appearing to curve inward slightly on either side of the U-shaped apical excision ; median lobe subparallel, bluntly pointed.

Female.—Tarsi, metasternum, and last sternite as in male. Ovipositor (fig. 125) yellowish, with apex piceous, bluntly pointed ; with short styli at a distance equal to their length from the slightly acuminate apex ; coxites with outer subdivisions moderately long and broad ; " central point " central, without a ventral spicule ; transverse suture straight.

Type ♂, KENYA : Aberdare Range, Mt. Kinangop, 9,000 ft., cedar forest, 27.x.1934 (*F. W. Edwards*), collected on the British Museum East African Expedition ; in British Museum (Natural History).

Paratypes, KENYA : same data, 3 ♀. Without precise locality, Kenya, on *Pyrethrum* (Compositae), 18.iii.1941, 2 ex.; 2.xi.46, 9 ex.; v.1949, 2 ex.; vi.1949, 12 ex.; 1949, 1 ex. (all *R. H. LePelley*) ; in the collections of the Commonwealth Institute of Entomology and of the British Museum (Natural History).

Biology.—Active iii, vi, x, xi, at 9,000 ft. *Pyrethrum* is unlikely to be its true host.

Variations.—Length 2·1–2·4 mm. The teeth on the outer edge of the front tibiae are somewhat variable, and there is occasionally an additional more prominent one between that at the basal third and the subapical group.

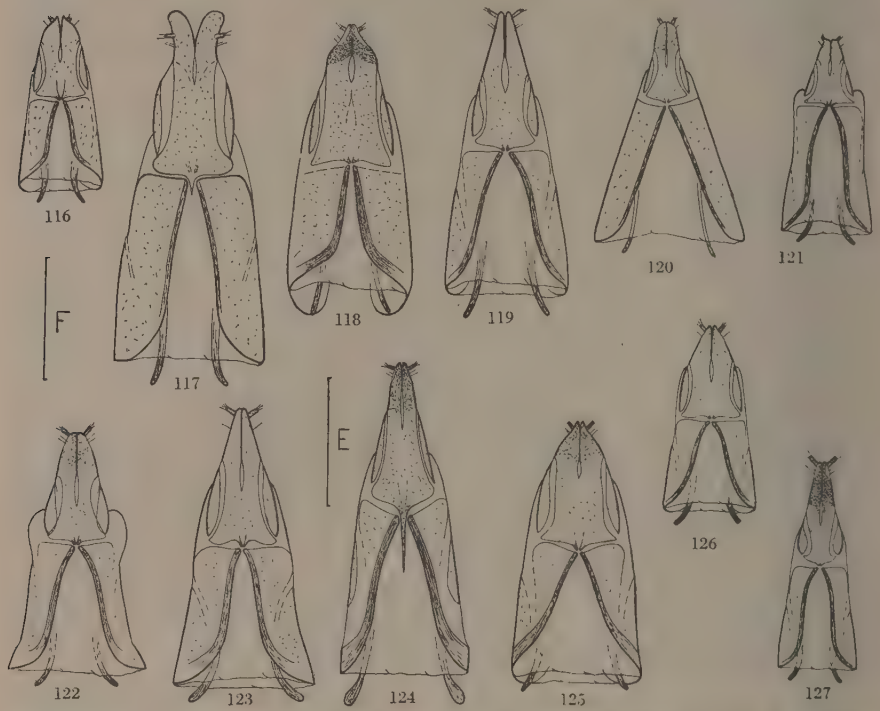
Comparative notes.—In form, sculpture, and general appearance highly reminiscent of *M. subexilis* Grouvelle, but at once distinguished by its wider front tarsi, and by its slightly thickened intermediate tibiae. The genitalia in both sexes are distinct, and *lepelleyi* is without any secondary sexual character at the apex of the last sternite.

✓**Meligethes johnstoni** sp. n.

Uganda

Male.—Length, 2·1 ; breadth, 1·0 mm. Elongate, subparallel, moderately convex, deep black, shining, with fine yellowish recumbent pubescence ; antennae and legs black. *Head* transverse, weakly convex ; clypeus with front margin distinctly bordered, widely, moderately deeply emar-

ginate, with side angles sharp ; surface with punctures smaller than eye facets, separated by one to one and a half diameters, spaces between them microscopically reticulate. Antennae almost black, second segment brownish ; club oval, twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (0·85 : 0·5 mm.), widest at middle ; sides scarcely convergent to base, rounded inwards anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·8 : 0·55 mm.), scarcely convex, weakly sinuate on either side of scutellum, hind angles obtusely rounded. Surface with punctures



Figs. 116–127.—Ventral view of ovipositors : (116) *Meligethes clypeonitens* sp. n. (117) *M. heteropus* Gerstaecker. (118) *M. hargreavesi* sp. n. (119) *M. profugus* sp. n. (120) *M. voeltzkowi* Grouvelle. (121) *M. mimetes* Grouvelle. (122) *M. perfectus* sp. n. (123) *M. imperfectus* sp. n. (124) *M. rileyi* sp. n. (125) *M. lepelleyi* sp. n. (126) *M. johnstoni* sp. n. (127) *M. patiens* sp. n. Scale E (fig. 124) = 0·35 mm. Scale F (figs. 116–123, 125–127) = 0·25 mm.

as large as eye facets, separated by one and a half diameters, spaces between them strongly reticulate. *Elytra* scarcely longer than broad (1·05 : 1·0 mm.), widest at second fifth, sides narrowly bordered, gently curved and convergent towards the widely rounded hind angles ; apex of each weakly convex ; sutural angle obtusely pointed. Shoulders moderately raised, without a humeral stria. Surface with punctures equal in size to eye facets separated by two and a half diameters ; spaces between them with distinct reticulation comprising small polygonal cells. *Scutellum* with apex rounded, surface closely transreticulate, with a few minute shallow punctures. *Pygidium* with surface closely granulate. *Ventral surface* black. Prosternal process scarcely wider than antennal club, with apex rounded, sides narrowly bordered ; surface with punctures equal in size to eye facets, separated by one and a half diameters. Metasternum with deep punctures slightly larger than eye facets, separated by one diameter, spaces between them obscurely reticulate ; a narrow median longitudinal linear area in posterior half impunctate and smooth. Abdomen with first sternite having punctures equal in size to eye facets separated by one and a half diameters, surface aciculate, succeeding segments much more finely and closely punctate, and with surface reticulate ; last sternite without secondary sexual character. Caudal marginal line

of hind coxal cavity following closely posterior edge of the latter and turning back shortly before reaching its outer end. *Legs* black, front tibiae faintly reddish. Front tibiae (fig. 31) subparallel, slightly wider than antennal club, outer edge with a small sharp prominent tooth at basal third, separated by a series of rather unequal denticulations from a subapical group of small sharp teeth of which the first and penultimate are larger and longer than those between ; subtarsal plate narrow. Intermediate and hind tibiae scarcely wider than front, their outer edges furnished from basal third and middle respectively with fine downwardly directed pegs, closer and longer on the hind pair. Inner edge of front and intermediate tibiae almost straight, of hind feebly convex at basal third ; not bordered. Front tarsi four-fifths, intermediate and hind half, as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* moderately short ; tegmen (fig. 90) with small, shallow, U-shaped, apical excision between short rounded lateral lobes ; median lobe (fig. 91) obtusely pointed.

Female.—Front tarsi three-quarters, intermediate and hind one-third, as wide as antennal club ; with intermediate tibiae apparently slightly flatter than in male. Ovipositor (fig. 126) yellow, with apex faintly pitchy-reddish ; somewhat pointed, with short styli at a distance from apex less than their length ; " central point " centrally placed, without a ventral spicule ; transverse suture straight.

Type ♂, UGANDA : Mt. Elgon, 8,000 ft., on flowers of *Helichrysum* (Compositae), iii.1934 (*H. B. Johnston*) ; in British Museum (Natural History).

Paratype, ♀, UGANDA : same data, in British Museum (Natural History).

Variation.—The paratype is 1·8 mm. in length.

Comparative notes.—Extremely closely related to *M. micropunctatus* Easton from Abyssinia, but with upper surface punctures coarser and microscopic reticulation more evident ; female with a shorter ovipositor, and male with apical excision of the tegmen narrower.

Meligethes scotti Easton

M. scotti Easton, 1954, *Brit. Mus. Exp. S.W. Arabia* **24** : 343.

EAST AFRICA : Arusha-Ju (*Katona*), xi.1905, 2 ♀, and xii.1905, 2 ♀, and between Moshi and Arusha (*Katona*), 6 ♀ ; in the Hungarian National Museum. This species occurs throughout the Somali-Arid area and has been fully dealt with elsewhere (Easton, 1954 and 1959). It does not appear to be as closely related to the following species as its proximity in the key might suggest.

Meligethes patiens sp. n.

Uganda

Male.—Length, 1·7 ; breadth, 0·95 mm. Elongate, subparallel, moderately convex, black, somewhat shining, with rather long close greyish-yellow pubescence; antennae and legs almost black. *Head* transverse, weakly convex ; clypeus with front margin narrowly bordered, widely emarginate with side angles sharp ; surface with punctures equal in size to eye facets, separated by half to one diameter, spaces between them smooth. Antennae very dark pitchy-reddish, almost black ; club oval, nearly twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, one and two-thirds times as wide as long (0·85 : 0·5 mm.), widest at basal third ; sides gently rounded near base, more strongly so and convergent anteriorly, narrowly bordered, feebly explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angles. Hind margin longer than front (0·8 : 0·5 mm.), weakly convex, feebly sinuate on either side of scutellum ; hind angles obtusely pointed. Surface with punctures scarcely as large as eye facets, separated by one and a half diameters, spaces between them smooth. *Elytra* as long as broad (0·9 : 0·95 mm.), widest at second fifth, sides narrowly bordered, gently rounded and convergent towards the widely rounded hind angles ; apex of each separately, weakly convex ; sutural angle obtusely pointed. Shoulders moderately raised, with a trace of a humeral stria. Surface with punctures equal in size to those of pronotum, separated by one and a half diameters ; spaces between them smooth. *Scutellum* with apex rounded, surface reticulate, with minute evenly distributed punctures. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process as wide as antennal club with apex rounded, sides bordered, surface with punctures equal in size to eye facets separated by half a

diameter, spaces between them smooth. Metasternum with punctures of equal size separated by half to one and a half diameters, spaces between them smooth; without secondary sexual characters. Abdomen with first ventral segment similarly punctured, the succeeding segments much more finely and closely punctate and with surface reticulation. Caudal marginal line of hind coxal cavity following very closely posterior edge of the latter, turning back shortly before reaching its outer end. Apex of last sternite with its edge thickened, and arching forward slightly on to the ventral surface as a curved shining ridge, whose length equals width of antennal club. *Legs* black, front tibiae faintly reddish. Front tibiae (fig. 32) narrow, one and a quarter times as wide as antennal club, outer edge with sharp irregular teeth, one more prominent near basal fourth, and an ill-defined subapical group; subtarsal plate narrow. Intermediate and hind tibiae as wide as front, broadest at middle and apical third respectively, their outer edges furnished from basal fourth and third respectively with fine, close, downwardly directed bristles. Inner edge of front and intermediate tibiae almost straight, of hind slightly convex at basal third; not bordered. Front tarsi three-quarters, intermediate and hind half, as wide as antennal club; last segment as long as first four together; claws simple. *Genitalia* somewhat elongate. Tegmen (fig. 92) narrowed from apical third, with narrow U-shaped apical excision between short, wide, rounded lateral lobes; median lobe (fig. 93) with apex very obtusely pointed, almost rounded.

Female.—Front tarsi narrower, about two-thirds as wide as antennal club; last ventral segment of abdomen simple. Ovipositor (fig. 127) small and pointed, reddish-yellow with apex, including styli, deeply piceous; styli nearly three times as long as wide, inserted subapically on a broad membranous base; coxites with outer subdivisions short and broad, inner abruptly expanded to outer basal angles, then obliquely contracted to "central point"; latter centrally placed, without a ventral spicule.

Type ♂, UGANDA: Kigezi District, Mabungo Camp, 6,000 ft., xi.1934 (*J. Ford*, B. M. East Africa Exp.); in British Museum (Natural History).

Paratypes, KENYA: without more precise data, 1940, 4 ex. including 2 ♂; 18.iii.41, 1 ♂; v.1941, 1 ♂, 1 ♀; v.1943, 1 ♀; all on *Pyrethrum* flowers (Compositae) (*R. H. LePelley*); in the Commonwealth Institute of Entomology.

Variations.—Length 1·7–2·1 mm. In some of the paratypes the pubescence is more conspicuous than in the type, and yellower. The teeth on the outer edge of the front tibia are very variable, being sometimes blunter, shorter, and more uniform in size.

Biology.—Active iii, v, xi. *Pyrethrum* is unlikely to be the host-plant.

Comparative notes.—Amply distinct from, and probably not closely related to *M. lepelleyi*, taken by the same collector on the same flowers. *M. patiens* is apparently a near relative of *M. abstractus* Grouvelle, having very similar genitalia in both sexes and a like type of male secondary sexual character at the apex of the last abdominal sternite; their general form, colour, and pubescence have much in common, but *patiens* is distinguished by a complete absence of transrugosity of the elytra, and by its more strongly transverse head.

IV. Summary

In this paper the author deals with the *Meligethes* of East Africa on lines similar to those adopted (1959) in the case of Abyssinia. It is based on a study of authentic examples of all previously described species, resulting in the recognition of five new synonymies, and on much new material derived from various sources. A key is given based on characters of taxonomic value, and several important species-groups are defined. Following the key, 32 new species are described, and all species are considered in some detail; taxonomic and comparative remarks are included, but with few exceptions little or nothing is yet known of the host-plant relationships. Text-figures are given illustrative of the principal arrangements of the teeth on the outer edge of the front tibiae, and of the genitalia in both sexes.

V. Acknowledgments

The author's original embarkation upon a study of the *Meligethes* of the world stemmed from encouragement and sustained interest shown by Dr. H. E. Hinton,

of which recognition is now made in the dedication to him of a new species (*M. hintoni*). Work on the *Meligethes* of East Africa could never have proceeded without preliminary personal knowledge of species previously described. This was made possible through the kind co-operation of Mons. A Descarpentries and others of the entomological staff of the Muséum National d'Histoire Naturelle, Paris, of Dr. René Malaise of the Naturhistoriska Riksmuseum, Stockholm, and of Dr. Delkeskamp of the Zoological Museum of the Humboldt University, Berlin, all of whom loaned valuable authentic material. Individual items or large collections were put at the disposal of the author by Mr. J. Balfour-Browne, Mr. E. B. Britton, and others of the British Museum (Natural History), by the staff of the Commonwealth Institute of Entomology, by Dr. Z. Kaszab of the Hungarian National Museum, and by Dr Freude of the Zoologische Sammlung des Bayerischen Staates, München. The author's own sizeable collection has been amassed as a result of untiring field-work over many years by Mr. and Mrs. Bernard Verdcourt ; the former has also contributed valuable data on plant associations ; to both of them species have been dedicated (*verdcourti*, *lornae*). Lesser, but valued, contributions have been from Zanzibar by Mr. D. L. Johns (*johnsi*), whilst individual items have also been included from Dr. A. H. Newton and Mr. C. Jacot-Guillarmod, whose main collecting has been done in areas outside the scope of the present paper. Once again the Director of the Royal Botanic Gardens, Kew, has given valuable help in botanical nomenclature. Many others have given advice or practical help, and to all of them the author expresses his sincere gratitude.

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